



**Body Mass Index and Its Relationship to Performance in the Snatch Lift among Female Weightlifters of the Iraqi National Weightlifting Team**

**Hubungan Indeks Massa Tubuh dengan Kinerja Angkatan Snatch Atlet Angkat Besi Perempuan Tim Nasional Angkat Besi Irak**

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**ABSTRACT**

The problem addressed in this research stems from the noticeable variance in the performance of female weightlifters during certain lifts in the sport of weightlifting. This variance affects the consistency of achieving the required outcomes in some physical abilities and motor skills, such as the snatch and clean & jerk lifts. One possible cause of this inconsistency is the presence of excess body weight that is not beneficial for performance, particularly in practical training sessions. Possessing good physical and motor fitness is a critical factor in the educational and athletic development process for athletes engaged in various sports activities. By managing and controlling BMI, athletes can maintain an appropriate athletic physique. The research aims to identify the level of performance in the snatch lift in Olympic weightlifting and to determine the nature of the correlation between performance outcomes and the Body Mass Index (BMI). The hypothesis of this work is that there is a statistically significant correlation between performance in the snatch lift and Body Mass Index. The researchers employed the descriptive method using survey and correlational research techniques. The study population was deliberately selected and consisted of female athletes from the Iraqi national weightlifting team. The BMI values for the sample were calculated using the standard BMI formula. The main experiment was conducted over two days. On the first day, the sample was assembled in one of the halls of the Rose Resort in Shaqlawa, Erbil, with the support of an assisting team. On the second day, the snatch lift test was conducted. After completing the BMI measurements and performance tests, the data were statistically analyzed to determine the nature of the relationships among the studied variables and to draw relevant conclusions.

**Keywords: Body Mass Index (BMI), Performance, Snatch Lift**

**ABSTRAK**

Permasalahan yang dibahas dalam penelitian ini berasal dari perbedaan nyata dalam performa atlet angkat besi wanita pada angkatan tertentu dalam olahraga angkat besi. Varians ini mempengaruhi konsistensi pencapaian hasil yang diperlukan dalam beberapa kemampuan fisik dan keterampilan motorik, seperti angkatan jerk dan clean & jerk. Salah satu kemungkinan penyebab ketidakkonsistenan ini adalah adanya kelebihan berat badan yang tidak bermanfaat bagi performa, khususnya pada sesi latihan praktik. Memiliki kebugaran jasmani dan motorik yang baik merupakan faktor penting dalam proses pendidikan dan pengembangan atletik bagi atlet yang melakukan berbagai kegiatan olahraga. Dengan mengelola dan mengendalikan BMI, atlet dapat mempertahankan fisik atletik yang sesuai. Penelitian ini bertujuan untuk mengetahui

tingkat performa angkatan angkatan angkat besi olimpiade dan mengetahui sifat hubungan antara hasil performa dengan Indeks Massa Tubuh (IMT). Hipotesis dari penelitian ini adalah terdapat korelasi yang signifikan secara statistik antara kinerja dalam angkatan angkatan dan Indeks Massa Tubuh. Peneliti menggunakan metode deskriptif dengan menggunakan teknik penelitian survei dan korelasional. Populasi penelitian sengaja dipilih dan terdiri dari atlet putri timnas angkat besi Irak. Nilai BMI sampel dihitung menggunakan rumus BMI standar. Percobaan utama dilakukan selama dua hari. Pada hari pertama, sampel dikumpulkan di salah satu aula Rose Resort di Shaqlawa, Erbil, dengan dukungan tim pendamping. Pada hari kedua dilakukan uji angkatan grab. Setelah menyelesaikan pengukuran BMI dan tes kinerja, data dianalisis secara statistik untuk menentukan sifat hubungan antar variabel yang diteliti dan untuk menarik kesimpulan yang relevan.

**Kata Kunci: Indeks Massa Tubuh (IMT), Performa, Snatch Lift**

## INTRODUCTION

To reach peak performance (optimal athletic form) in the components of specific physical fitness for a weightlifter or athlete, one must persistently adhere to the elements of the training program and maintain consistency. Health is considered a benchmark for an individual's success in the tasks assigned to them, whether in general life or in sports. Achieving this requires physical, psychological, and social well-being and the integration of these aspects to ensure the individual enjoys good overall health (Aso, 2015). Each sport is characterized by a specific motor performance that distinguishes it from other sports, and the science of training plays a key role in its development. One such sport is weightlifting. The Body Mass Index (BMI) is one of the most widely used metrics for determining body mass using height and weight. It is an accessible and simple method available to all professionals in sports and health fields, aiding in the assessment of body weight, health status, and the estimation of relative disease risks compared to normal weight. Many studies have examined BMI as a variable. For example, the study by Abdelhaq et al. (2010) (Imad Abdelhaq, 2010) applied BMI measurements to a sample of students from the Faculty of Physical Education at the University of Palestine and compared the results to the global BMI classification. Similarly, the study by Yousef Abdullah Al-Turki (2006) (Yousef Abdullah, 2006) applied the BMI formula to students at King Saud University in Riyadh, Saudi Arabia, and compared the results with the global classification of the World Health Organization (WHO). Also relevant are the studies by Al-Quhiz (2006) (Al-Quhiz, 2006) and Najoumi & Najm Abadi (2005), which focused on obesity among students at the University of Tehran. Our study differs from these by examining two variables: Body Mass Index (BMI) and performance in the snatch lift in Olympic weightlifting.

The significance of this research lies in the fact that both the snatch lift and BMI are crucial for those practicing this sport. These factors contribute to improving the performance of female lifters and assist coaches in designing or prescribing suitable training exercises to enhance the athletes' psychological, physical, and technical levels. This is what motivated the researchers to measure the degree of achievement in the snatch lift and its relationship to BMI. Being overweight or obese is one of the primary factors that can threaten an athlete's life, either by leading to chronic diseases or even death. Mustafa Abdul-Zahra (Mustafa, 2011), citing a study by the World Health Organization (WHO), stated that at least one-third of the world's population is

overweight, and approximately one-tenth is obese. When body fat exceeds acceptable levels, it can lead to serious consequences, such as cardiovascular diseases, primarily heart disease and stroke. These conditions can result in severe disability or even premature death.

This research aims to produce findings that can be placed in the hands of coaches in this sport to help identify strengths and weaknesses, enabling them to appropriately support female lifters and contribute to the development of the sport. Research problem is possessing both physical and psychological fitness is considered a crucial factor in the educational and athletic development of female athletes practicing different events in weightlifting. By managing and controlling Body Mass Index (BMI), athletes can maintain an appropriate athletic physique. Based on this, the research problem was formulated to investigate the nature of the relationship between performance in the snatch lift and Body Mass Index (BMI) among female weightlifters of the Iraqi national team.

Research objectives is This research aims to: Identify the level of performance in the snatch lift and Body Mass Index (BMI) among female athletes of the Iraqi national weightlifting team (research sample). Determine the correlation between Body Mass Index (BMI) and performance in the snatch lift among female athletes of the Iraqi national weightlifting team.

Research Hypotheses is there is a statistically significant correlation between the results of performance in the snatch lift in Olympic weightlifting and the Body Mass Index (BMI) among the female athletes of the Iraqi national weightlifting team (research sample).

## METHOD

Research Methodology: The researchers used the descriptive method, employing both the survey and correlational approaches, as it suited the nature and problem of the study.

Research Fields: Human Field: Female athletes of the Iraqi national weightlifting team.

Temporal Field: The period from 15/07/2024 to 30/07/2024.

Spatial Field: The weightlifting hall at the national training center, located in Rose Resort, Shaqlawa, Erbil.

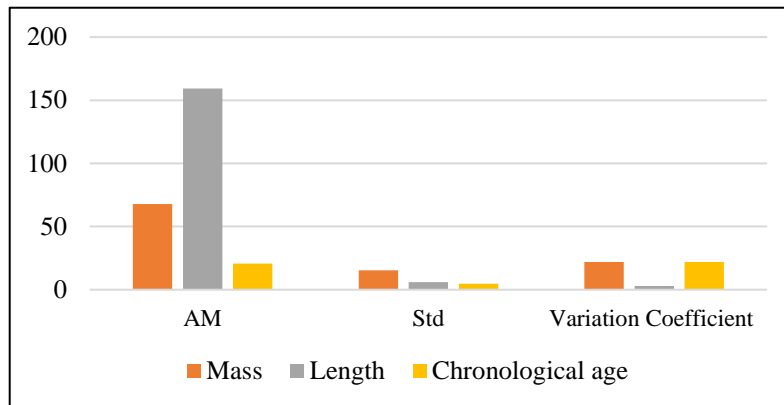
Research Population and Sample: The research population was intentionally selected and consisted of female athletes from the Iraqi national weightlifting team, totaling 10 participants. Table 1 shows the specifications of the sample in terms of body mass, height, and chronological age.

Table 1: Specifications of the Research Sample: Body Mass, Height, and Age

Variables	AM	Std	Variation
Statistical parameters			Coefficient
Mass	67.8	15.4	22
Length	159.2	5.9	3
Chronological age	20.8	4.61	22

It is observed from Table 1 that the values of the coefficient of variation were (22, 3, 22), respectively, all of which are less than 30. This indicates that the sample is homogeneous in the variables mentioned in the table, as the participants are the same female weightlifters and are relatively close in age group.

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**Figure 1.** shows the specifications of the research sample in the variables of mass, height, and chronological age.

### Tools, Equipment, and Materials Used in the Research:

Stopwatch (1), Laptop (Dell) (1), Hand calculator, Height measuring device (1), Weight scale (2), Measuring tape, Adhesive tape, Stationery (papers – pens), Arabic and foreign references, and Tests and measurement tools

### Field Research Procedures:

#### Main Experiment, Snatch Lift:

The researchers, with the help of the assisting team, conducted the snatch lift test, allowing each of the 10 female athletes in the sample to perform three attempts. The best attempt was recorded on Saturday, July 20, 2024, in the sports hall. This was done in order to establish the scientific foundations of the test, as detailed below.

#### Scientific Basis of the Snatch Lift Test (Wadih, 2018, p. 149):

It was essential for the researchers to ensure the test met the scientific standards of validity, reliability, and objectivity, as these are among the most important psychometric properties a test should have. Since the test was designed for specific evaluative purposes, confirming these properties was necessary to ensure the quality and appropriateness of the measurement tool used in evaluation and assessment.

#### Test Validity:

Validity is one of the fundamental characteristics of psychological measurements, as it refers to a tool's ability to measure what it is intended to measure. Validity is directly related to the objective upon which the test is built (Wahib, 2010, p. 33). The researchers will verify the validity of the measurement through content validity indicators.

#### Test Reliability:

The reliability coefficient of the test will be determined by using the test-retest method on the pilot sample. BMI (Body Mass Index) Test (Muhammad, 1998, pp. 213-217) and How It Is Measured: This test expresses the relationship between the student's weight and height. It is the most widely recognized global measure used to distinguish between overweight and obesity, and it is considered the best standard for measuring obesity worldwide. BMI is calculated by dividing weight in kilograms by the square of height in meters, as follows:  $\text{Body Mass Index (BMI)} = \text{Weight (kg)} / \text{Height}^2 (\text{m}^2)$

Statistical Tools: The researchers will use statistical tools from the SPSS program.

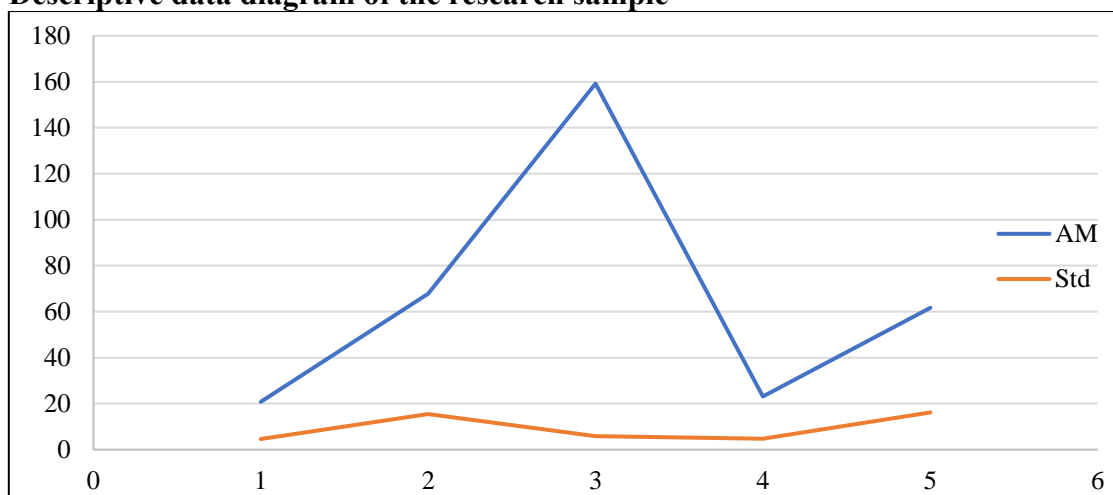
## RESULTS AND DISCUSSION

Results:

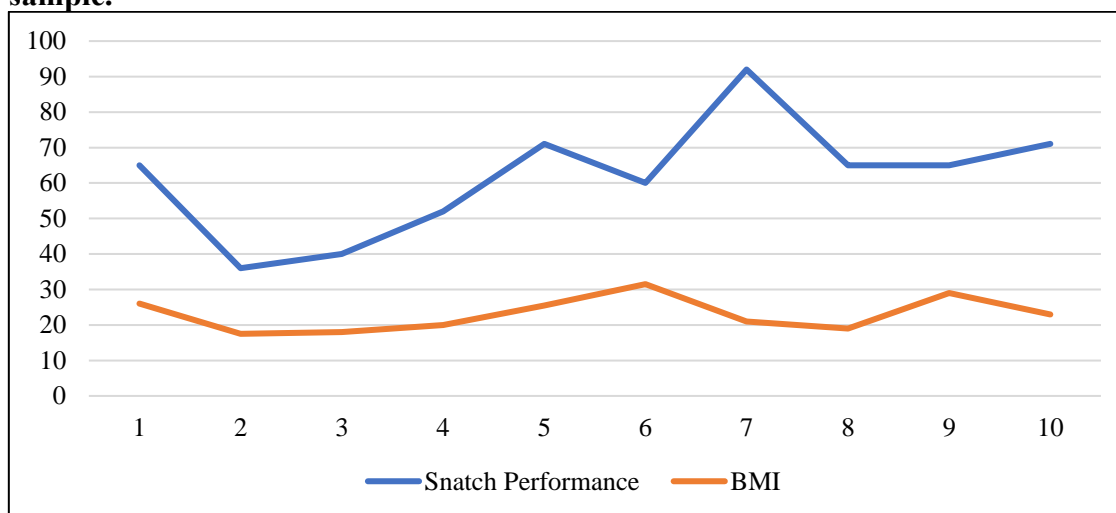
Presentation of Descriptive Data for the Research Sample

No.	Variables	Unit of measurement	AM	Std
1	Age	Year	20.8	4.6
2	Weight	Kg	67.8	15.4
3	Height	cm	159.2	5.9
4	BMI	kg/m <sup>2</sup>	23.1	4.8
5	Snatch Performance	kg	61.7	16.17

### Descriptive data diagram of the research sample



A diagram showing the variables BMI and snatch achievement for the research sample.



### Displaying the correlation coefficient between the studied variables

Table No. 4 shows the positive correlation between the two variables (snatch lift and body mass index (BMI)).

Sequence	Correlation value	Sign.
BMI Snatch Achievement	0.348	Positive Direct Correlation

## Discussion

The correlation value between performance in the snatch lift and Body Mass Index (BMI) was 0.34, which indicates a positive direct correlation. This demonstrates the relationship between BMI and performance in the snatch lift. This finding is supported by Wadie Al-Tikriti (Wadie, 2010, P.9), who emphasized that female lifters must adhere to and maintain their weight and BMI levels. Doing so helps them avoid diseases such as hypertension, diabetes, and heart conditions. Regular physical activity, performed daily for no less than 30 minutes, contributes to overall physical fitness and can lead to weight loss of approximately 11 kg per year, although this may vary slightly between individuals (Amed, 2015). It is also important to avoid foods that cause rapid weight gain, especially fast food, which has become increasingly widespread and contains large amounts of fats, proteins, and sugars. Instead, athletes should increase their intake of organic foods, such as vegetables and fruits, due to their high nutritional value and low caloric content (Farouk, 1995, p. 80).

## CONCLUSIONS

1. There is a positive correlation between Body Mass Index (BMI) and performance in the snatch lift among the female athletes of the Iraqi national weightlifting team.
2. Performance in the snatch lift exceeded the BMI values, with the arithmetic mean of the snatch lift being 61.7 kg and the BMI 23.1.
3. The research sample was classified within the normal weight range, which falls between 18.5–25, according to the Body Mass Index (BMI) classification issued by the World Health Organization (WHO).

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