

## SETTING STANDARD LEVELS FOR OBESITY AND CERTAIN PHYSICAL CAPABILITIES FOR FEMALE STUDENTS AT THE COLLEGE OF EDUCATION, UNIVERSITY OF KUFA

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### ABSTRACT

*Obesity, experienced by many, often results from a lack of nutritional awareness, excessive food intake, poor choice of food types, and low levels of effort and physical activity. We eat more than our bodies need and move little, leading to the storage of excess energy from food as fat, which accumulates in various parts of the body, Conclusions; There's a noticeable decrease in the Body Mass Index (BMI) variable among the research sample of female students, The research sample exhibits considerable weakness in the abdominal muscle endurance variable, The research sample performed well in the flexibility attribute, which was the best among the physical attributes under investigation.*

**KEYWORDS:** *Obesity, Female students, Setting standards*

## **INTRODUCTION:**

Obesity, experienced by many, often results from a lack of nutritional awareness, excessive food intake, poor choice of food types, and low levels of effort and physical activity. We eat more than our bodies need and move little, leading to the storage of excess energy from food as fat, which accumulates in various parts of the body.

An overweight female student is called various names, which might cause her to feel frustrated and affect her psychological state.

From the above, it's concluded that obesity and physical inactivity among female students are prevalent, and obesity is somewhat associated with decreased physical activity in this age group.<sup>1</sup> Therefore, all measures should be taken to combat obesity and physical inactivity, as it's crucial to avoid the health issues associated with these two factors, which are considered health risk factors. To achieve this, it's necessary first to identify obesity levels to propose suitable solutions for addressing them before it's too late. Hence, the importance of the research lies in identifying obesity levels and some physical capabilities among female students.

## **Research Problem:**

Obesity is one of the main factors leading to the occurrence of many directly related diseases. The community's lack of awareness about its obesity levels might lead to its gradual increase through greater food intake and a gradual decrease in physical activity. Consequently, the research problem lies in the lack of studies indicating obesity levels among female students and the absence of studies showing certain physical capabilities among female students, according to the researcher. This serves as scientific evidence of the students' levels, similar to other countries, and aims to create a standard akin to other countries to help develop a generation with high health levels, benefiting the country economically.

## **Research Objectives:**

### **The research aims to:**

1. Establish standard scores and levels for obesity among female students.
2. Establish standard scores and levels for certain physical capabilities among female students.

## **Research Methodology:**

The researcher used the descriptive method (survey approach) as it is suitable for solving the research problem and achieving its objectives.

## **Research Population and Sample:**

The research population was identified as female first-year students in the College of Education, University of Kufa. The research sample was randomly selected according to the scientific methods used in this, with (15) from each department, for a total sample of (60) female students.

## **Field Research Procedures:**

Measurements used in the research

Height measurement

Weight measurement

Body Mass Index (BMI) calculation to determine overweight and obesity

- Body Mass Index (BMI) is calculated by dividing weight (kg) by the square of height (meters).<sup>2</sup>
- Body Mass Index (BMI) = Weight (kg) ÷ (Height (m) × Height (m)).

## **Skinfold Thickness Measurement to determine body fat percentage:**

- Tests used in the research
- Trunk flexion from sitting position
- Sit-ups from a lying position with bent knees
- Pilot experiment

The researcher conducted a pilot experiment with a sample of (5) female students to understand the time required to conduct the tests, any challenges that might arise, the capability of the assisting team to use devices and equipment, and to divide tasks among them, ensuring the safety of the devices used.

**The results of this experiment were as follows:<sup>3</sup>**

1. All tools and devices used for measurement were functional.
2. Task distribution among the assisting team and the sequence of measurements, as follows:
  - Height measurement.
  - Weight measurement.
  - Skinfold Thickness Measurement.
  - Flexibility measurement.
  - Abdominal muscle endurance measurement.
3. The assisting team understood and could perform all tests.
4. The data recording form was suitable for its intended purpose.

**Main Experiment:**

The tests and measurements were conducted on the research sample, totaling female students, starting at 9:00 a.m. on Thursday, December 5, 2023, until Wednesday, December 12, 2023.

**Statistical Methods:**

- The Statistical Package for the Social Sciences (SPSS) was used to process the results statistically.

**PRESENTATION AND ANALYSIS OF RESULTS:**

Obtaining raw scores is the first step in building standards and levels, but these scores themselves do not represent anything unless compared to standards or levels to determine where one stands in relation to others, ultimately forming a final judgment. As noted, "Raw scores derived from applying tests hold no inherent meaning or significance unless we refer to a standard that defines what these scores mean."<sup>4</sup>

**Descriptive Data Results for Female Students in the Variables Under Investigation**

**Table (1).** Descriptive data for variables under investigation (flexibility, endurance, and BMI) for female students

Variables	Height (m)	Weight (kg)	Body Mass Index (kg/m <sup>2</sup> )	Flexibility (cm)	Endurance (repetitions)
Mean	1.423	38.422	18.765	21.691	29.017
Median	1.420	36.000	17.605	22.000	27.000
Std. Deviation	0.076	10.572	4.016	5.841	17.614
Min Value	1.240	21.000	12.398	7.000	0.000
Max Value	1.670	84.000	35.029	39.000	108.000
Skewness	0.214	1.255	1.316	-0.030	0.981

Presentation and Analysis of Standard Scores and Levels for the Body Mass Index (BMI) Variable for Female Students

**Table (2).** Boundaries of standard scores for the BMI variable for female students

Standard Scores	Female Students
8	29.504 – 33.540
7	25.458 – 29.494
6	21.412 – 25.448
5	17.366 – 21.402

4	13.320 – 17.356
3	9.274 - 13.310
2	5.228 - 9.264
Arithmetic Mean (kg/m <sup>2</sup> )	19.384
Standard Deviation	4.036
Constant Number	2.018

From the previous table for the BMI variable for female students, the highest percentage was achieved in the low level at 43.75%, while the lowest percentage was in the very high level at 1.705%.

**Discussion of BMI Variable Results:**

Through the BMI variable tables, it's apparent that there is a variation in the standard levels achieved by the research sample compared to the expected ones on the normal distribution curve. In the "very low" level, the research sample achieved 27.840%, which is much higher than the expected percentage in the normal distribution curve of 2.14%.

These results are attributed to possible malnutrition in the research areas, as well as low body fat percentages. There may also be a disparity in the living conditions among the students, with many families from lower-income classes. The proximity of sports fields or sports clubs to their residences might contribute to increased physical activity, leading to more energy expenditure compared to intake.<sup>5</sup>

In the "very high" level for female students, the research sample achieved 1.705%, which is lower than the expected percentage in the normal distribution curve of 2.14%.

Several studies indicate that the longer the TV watching duration, the higher the likelihood of obesity. Similar factors related to the internet also link to obesity,<sup>6</sup> such as reduced time for physical activity due to longer internet use, leading many people to consume high-calorie foods while online. Additionally, topics and ads on the internet concerning obesity can influence users, potentially impacting their beliefs and actions.

**Presentation and Analysis of Standard Scores and Levels for the Flexibility Variable for Female Students**

**Table (3).** Boundaries of standard scores for the flexibility variable for female students

Standard Scores	Female Students
8	36.323 – 42.164
7	30.472 – 36.313
6	24.621 – 30.462
5	18.771 – 24.611
4	12.92 – 18.761
3	7.069 – 12.91
2	1.218 – 7.059
Arithmetic Mean (cm)	21.691
Standard Deviation	5.841
Constant Number	2.920

From the above table, the arithmetic mean for the flexibility variable was 21.691 with a standard deviation of 5.841, while the constant number was 2.920.

**Table (4).** Boundaries of standard levels for the flexibility variable for female students

Standard Levels	Female Students
Very Low	7 – 12.33
Low	12.34 – 17.67
Acceptable	17.68 – 23.01
Medium	23.02 – 28.35
High	28.36 – 33.69
Very High	33.70 – 39.03

From the above table for female students, the boundaries for flexibility levels range between very low (7-12.33) and very high (33.70-39.03).

**Table (5).** Boundaries of standard levels and their percentages for the flexibility variable for female students

Boundaries of Standard Levels and Their Percentages	2.14 %	13.59 %	34.13 %	34.13%	13.59%	2.14%	Total
Classification	Very Low	Low	Acceptable	Medium	High	Very High	--
Number	38	86	207	133	56	8	528
%	7.20 %	16.29 %	39.20 %	25.19%	10.61%	1.51%	100%

From the previous table for the flexibility variable for female students, it's evident that the highest percentage was achieved in the acceptable level with 39.20%.

**Discussion of Flexibility Variable Results:**

Through the flexibility variable tables, there's a variation in the standard levels achieved by the research sample compared to the expected ones on the normal distribution curve. In the "very low" and "low" levels, the research sample achieved 7.20%, which is higher than the expected percentage in the normal distribution curve of 2.14%.

The results show that the levels achieved are slightly above those on the normal curve. This increase is viewed as positive compared to the sample's size, with the sample centered around the acceptable and medium levels. The researcher attributes this slight increase to a lack of exercises to increase joint flexibility and hamstring muscles, leading to an increase in skeletal muscle flexibility.<sup>7</sup> Additionally, increased weight has a negative impact on joint movement and weak hamstring muscles among female students with high and very high fat percentages, impacting their ability to extend their bodies forward and reducing joint movement towards the box and indicator.<sup>8</sup>

In the acceptable, medium, high, and very high levels, the research sample achieved 39.20%, 39.44%, 25.19%, and 32.99%, respectively, slightly higher or lower than the expected percentages on the normal distribution curve. The researcher believes that the best level in the flexibility variable is centered around the acceptable and medium axes, which is a good indicator compared to the sample's size in this level.

**Presentation and Analysis of Standard Scores and Levels for the Abdominal Muscles Endurance Variable for Female Students**

**Table (6).** Boundaries of standard scores for the abdominal muscles endurance variable for ages 11 and 12 years

Standard Scores	Female Students
8	73.082 – 90.696
7	55.458 – 73.072

6	37.834 – 55.448
5	20.21 – 37.824
4	2.586 – 20.2
3	(-15.038) – 2.576
2	(-32.662) – (-15.048)
Arithmetic Mean (repetitions)	29.017
Standard Deviation	17.614
Constant Number	8.807

From this table, the arithmetic mean for the abdominal muscle endurance variable among female students is 29.017 with a standard deviation of 17.614, while the constant number is 8.807.

From the previous table, the arithmetic mean for the abdominal muscles endurance variable was 29.017 with a standard deviation of 17.614, while the constant number was 8.807.

**Table (7).** Boundaries of standard levels for the abdominal muscles endurance variable for ages 11 and 12 years

Standard Levels	Female Students
Very Low	0 – 18
Low	18.01 – 36.01
Acceptable	36.02 – 54.02
Medium	54.03 – 72.03
High	72.04 – 90.04
Very High	90.05 – 108.05

From the previous table, the boundaries for abdominal muscles endurance levels range between very low (0-18) and very high (90.05-108.05).

**Table (8).** Boundaries of standard levels and their percentages for the abdominal muscles endurance variable for ages 11 and 12 years

Boundaries of Standard Levels and Their Percentages	2.14%	13.59%	34.13%	34.13 %	13.59%	2.14%	Total
Classification	Very Low	Low	Acceptable	Medium	High	Very High	--
Number	158	222	105	34	3	6	528
%	29.92 %	42.04%	19.89%	6.44%	0.57%	1.14%	100%

From the above table for the abdominal muscles endurance variable for ages 11 and 12 years, it's evident that the highest percentage was achieved in the low level at 42.04%, while the lowest percentage was in the high level at 0.57%.

**Discussion of Abdominal Muscles Endurance Variable Results:**

Through the abdominal muscles endurance variable tables, it's evident that there's a variation in the standard levels achieved by the research sample compared to the expected ones on the normal distribution curve. In the "very low" and "low" levels, the research sample achieved 29.92% and 41.85%, much higher than the expected percentages on the normal distribution curve of 2.14% and 13.59%.

The previous percentages show that the sample is centered around the very low and low levels, which is an alarming indicator, as this percentage represents over three-quarters of the sample. This is attributed to the weakness in the abdominal muscles among many female students. Moreover, fat percentages impact this high percentage, as observed by the researcher, with many female students with medium and high-fat percentages obtaining a zero grade, indicating that those at these levels cannot endure for a long duration.<sup>9</sup>

In the "acceptable" level, the research sample achieved 19.89% and 13.28%, much lower than the expected percentages on the normal distribution curve of 34.13%.

These percentages are much lower than the natural curve percentages, showing that only a small proportion of the sample falls within the acceptable level, indicating that the sample lies below the natural distribution limits. This is attributed to female students in the acceptable level having normal fat percentages, allowing them to raise their bodies with high fluidity, as well as the general disinterest in physical education teachers in general endurance exercises and specific abdominal muscles endurance exercises.<sup>10</sup>

In the "medium," "high," and "very high" levels for female students, the research sample achieved 6.44%, 1.41%, 0.57%, and 0.40%, respectively, which are lower than the expected percentages in the normal distribution curve of 34.13%, 13.59%, and 2.14%.

These results indicate that the research sample has a lower level of abdominal muscle endurance compared to what is expected in a normal distribution. This could be due to weak abdominal muscles and a high percentage of body fat, which affects the ability to endure physical activities for a longer period. Female students with higher fat levels struggle with abdominal muscle endurance tests because they need to overcome additional weight when performing such exercises. This was supported by Osama Al-Lala in 2000, who stated that high and very high body fat percentages are directly related to increased body weight, which adds extra burden on the body's organs and systems.<sup>11</sup>

In the "acceptable" level, the research sample achieved 19.89% and 13.28%, which is significantly lower than the expected percentages on the normal distribution curve of 34.13%.

These percentages indicate that the research sample largely falls within the "very low" and "low" categories, which might reflect a lack of exercise and inadequate physical fitness programs. Furthermore, physical education teachers might not focus on general endurance exercises, particularly abdominal muscle endurance exercises, leading to weaker performance among female students in this area. The impact of increased fat percentages and insufficient exercise practices could explain these results.

## CONCLUSIONS

1. There's a noticeable decrease in the Body Mass Index (BMI) variable among the research sample of female students.
2. The research sample exhibits considerable weakness in the abdominal muscle endurance variable.
3. The research sample performed well in the flexibility attribute, which was the best among the physical attributes under investigation.
4. Overall, the research sample lacks health-related physical fitness (flexibility and endurance).

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