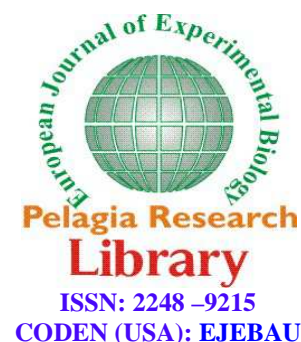




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### The musculoskeletal abnormalities in female students

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#### ABSTRACT

*Technological advances and their impacts on human life have led to sedentary. Since the move is essential to life, the lack of move in any age is associated with complications such as muscle weakness, physical abnormalities, obesity and mental disorders with mutual interactions. Given the motor deficiency in girls, 324 female students were randomly selected of the first and second year students. Fourteen abnormalities were evaluated from front, back and side views using the checkered board, padscope and New York test. Beck Depression Inventory was used to assess the level of depression. According to the results, all students had at least two abnormalities. The most frequent abnormalities were lumbar lordosis (73.4%) and uneven shoulder (66.8%). The less frequent abnormality was pelvic obliquity (3.7%). In addition, 71% of students had no depression.*

**Keywords:** Forward head, Rounded back, Rounded shoulders, Lumbar lordosis, Scoliosis, Genu valgus, Genu varum, Uneven shoulder, Pelvic obliquity, Flat feet

#### INTRODUCTION

Energy is a fundamental concept in physics and plays a significant role in the physics of the human body. All body functions including thinking require energy. Maintaining the posture and physical activity requires energy. Given the path of line of gravity from the various parts of the body in different static and dynamic situations, energy consumption is kept to a negligible level in normal mode. Musculoskeletal abnormalities increase the body's energy consumption in normal mode [1]. In other words, musculoskeletal abnormalities are undesirable changes that disturb the skeletal structure of the body and the natural order of the stature. The musculoskeletal abnormalities are generally caused by environmental factors, improper functioning of muscles and joints and improper motor habits. They can be improved by eliminating the underlying factors [2].

Many teens and youth are suffering from physical and musculoskeletal abnormalities. The symptoms are diagnosed as poor posture in the early stages. If the problem is not resolved and the process continues, it will be converted into musculoskeletal or structural abnormalities. The problem occurs due to inattention of parents and teachers, the lack of knowledge, expertise and adequate knowledge of the causes and its adverse effects on various aspects of physical and mental health. It may have been covered up and not diagnosed for many years. In this case, delayed diagnosis will require much time and costs [3].

With the advance of science and the human ability to prevent and deal with many of abnormalities, we are seeing an increasing level of health and quality of life. Accordingly, prevention and screening have received much attention by specialists. In addition, since treatment cannot be attempted in those aged over 25 years and only increased complications can be prevented, early diagnosis and treatment are of great importance.

## MATERIALS AND METHODS

Using the random sampling method, 324 female students of the first and second year were selected and examined. The items include: forward head, rounded back, rounded shoulders, lumbar lordosis with distended stomach and buttocks, lumbar lordosis, cervical scoliosis, thoracic and lumbar scoliosis, genu valgus, genu varum, uneven shoulder pelvic obliquity, flat feet, hallux valgus, and level of depression. The descriptive data and SPSS17 were used to display central tendency and dispersion.

## RESULTS AND DISCUSSION

The results showed that:

- **Mild:** the less frequent abnormality was lumbar lordosis with distended stomach (1.9%).
- **Severe:** no cases of lumbar scoliosis and pelvic obliquity were observed. The frequency of rounded back and rounded shoulders was 0.6%.
- **Mild:** the most frequent abnormality was lumbar lordosis (57.4%).
- **Severe:** the most frequent abnormality was uneven shoulder.
- The less frequent abnormality was pelvic obliquity (3.7%). The most frequent complications were lumbar lordosis (73.4%) and uneven shoulder (66.8%).
- Generally, each student has at least two abnormalities.
- 71% of students showed no sign of depression, 18.5% minimal degree, 8.6% mild and 1.9% showed severe depression (Table 1).

In general, such studies suggest the presence of abnormalities, but they differ in terms of the frequency of abnormalities. This is due to differences in age, gender and occupation of subjects. The results showed that all students suffer from at least two of 14 musculoskeletal abnormalities. In other words, a subject without any abnormality was not found. Alvandi (1995) studied high school students in Malayer. According to Alvandi, 94% of students were suffering from musculoskeletal abnormalities [4].

Table 1: The frequency of structural abnormalities

Complication	Mild (%)	Severe (%)	Uncomplicated (%)
Forward head	50	4.9	45.1
Rounded back	24.7	0.6	47.7
Rounded shoulder	38.9	0.6	60
Lumbar lordosis	57.4	16	16.6
Lumbar lordosis with distended stomach	1.9	2.5	95.7
Lumbar lordosis with distended buttocks	8.6	4.3	87
Cervical scoliosis	24.8	1.2	84
Thoracic scoliosis	31.5	0	68.5
Genu valgus	15.4	1.9	82.7
Genu varum	40.7	17.3	46
Uneven shoulder	47.7	19.1	6.2
Pelvis obliquity	3.7	0	96.3
Flat feet	4.9	1.9	93.2
Hallux valgus	37.8	3.7	68.5

It should be noted that the prevalence of abnormalities is different in different ages. The studies on educational levels (junior high, high school and college) show that the rate of abnormalities increases with age. According to Fathi and Rezaei (2010), the rate of abnormalities among female and male students in junior high school is 48.92 and 65.74, respectively while it reaches respectively to 51.09 and 69.73% in high school female and male students [5]. On the other hand, students have not yet entered the labor market, because the jobs affect the incidence of abnormalities in adulthood [6, 7]. Therefore, in addition to teaching proper and necessary techniques in daily life, physical activity and exercise should regularly run in lower educational levels to have strong muscles in adulthood.

Furthermore, medical studies show that the muscle strength is reduced with increasing age. Therefore, older people are more prone to abnormalities.

### CONCLUSION

According to the results, the most frequent abnormalities are lumbar lordosis and uneven shoulder. This is consistent with most previous studies on female students [5, 8, and 9]. Abnormalities are due to several factors rooted in structural and functional factors. Structural factors are caused by congenital skeletal abnormalities or environmental factors. But the functional factors are caused by behavioral problems, bad habits when sitting, standing, sleeping, studying, carrying things and doing daily jobs. Another important factor involved in functional abnormalities is motor deficiency [10, 11]. The lack of movement causes muscle weakness leading to bone deformation. The prevalence of abnormalities is higher in girls than boys. According to Fathi and Rezaei [5], the prevalence of abnormalities in girls and boys was 67.71% and 41.99%, respectively. According to Seneh [12], boys (82.89%) have more desirable postures as compared with girls (65.97%). Accordingly, the girls are more prone to abnormalities. It seems that movement restriction in open environments leads to higher prevalence of abnormalities in female students. To prevent musculoskeletal abnormalities in girls, they should register in sports clubs, but some families are not able to afford the costs.

The less frequent abnormality was pelvic obliquity. This is consistent with the results of Rahbar and Shujahuddin (2010) [8] and Moeini (1999) [9].

According to Askari (1994), the prevalence of forward head among students was 21%, but 54% of female students were suffering from forward head in our study [13].

After the results were announced to students, information on correct position and its comparison with the current position was presented by the researcher. The researcher encouraged participants to transmit this information to their family and friends. In addition, brochures containing corrective exercises were presented to participants who suffering from musculoskeletal abnormalities.

In total, the educational and media programs should raise the community awareness and knowledge about the correct stature order. It seems that this is more important for girls as future mothers.

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