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*Sito Internet:* [www.minervamedica.it](http://www.minervamedica.it) / *e-mail:* [minervamedica@minervamedica.it](mailto:minervamedica@minervamedica.it)

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## The influence on long forced positions and the physical inactivity on back pain and deformity of the spine

E. Popova Ramova <sup>1</sup>, A Poposka <sup>2</sup>, V. Stojcevska Prodanovska <sup>1</sup>

<sup>1</sup>Department of Physical Therapy, Univesity St.Kliment Ohridski- Bitola, Bitola, Republic of Macedonia

<sup>2</sup>Orthopedic clinic, Medical faculty Skopje, Republic of Macedonia

### Aim

From the consulted literature the general conclusion is that certain professions contribute for bad position, muscle tension, pain and neuron-sufferings.<sup>1, 2</sup> The symptoms are the most frequent in musicians, artists, taxi drivers and administrative workers who work on a computer and other video terminals.<sup>1-10</sup> In the diagnostic procedures the most applicable is EMG of the selected muscle group on the neck or back, then radiographic image, questionnaires, clinical examination with tests for the postures and in the last years and skin surface diagnostic methods.<sup>4-7</sup> As the most frequent reasons are the following: the changed intervertebral pressure in the spines as a result of the changed physiological curves of the spine and the inadequate desk and chair on the working post, inadequate height of the screen from the computer, the position of the shoulder belt regarding the mouse

and the keyboards.<sup>2, 3, 9</sup> The aim of this article is the connection of the long forced positions at a computer and the physical inactivity with the appearance of the back pain and the changed position.

### Methods

For the achievement of the based aims a research was carried out by volunteers who work on computer. The examination was consisted of a questionnaire, clinical survey with four standard tests for spine and survey with software program for skin surface diagnostic of the human posture with Spine mouse. The poll sheet had the following data: the gender, age, profession, diagnosed deformity of the spine at children age, pain (neck, back, sacrum), the hours of daily work on a computer, the hours weekly on sport.

The clinical examination consisted of the following tests:

Test 1- for higher positioned shoulder; Test 2-for appearance of the initial spine asymmetry at antireflection of the spine; Test 3- by Mathias for difference in sagital plain of a vertical axis of the body; Test 4 for shortened hamstrings'. The skin surface software program we used for diagnosis of the posture in sagital plain in straight position and its mobility with standard directions for using of the examination: 1. In the straight position with hands crossed on the chests; 2. In bending position with palms in the height of the knees; 3. Extension of the spine with fixed pelvis. The received data with poll sheets and the clinical examination we processed statistically in a descriptive manner.

### Results

With the analyses of the received data and parameters the following results are gained:

The total number of 36 employees was questioned 31 women and 4 men at the age 25-65.

The distribution of the questionnaires at the age and gender is presented in table I.

From Table I the frequent age group is 41-50, 16 (46%) from the total number of the examined. The distribution of the patients by age the present pain, the work on the computer and the physical inactivity are presented in Table II. From data of the Table

Table I. – Distribution of the tested by age and gender.

Age	Female	Male	Total
25-30	6	0	6 (17.4%)
31-40	4	1	5 (14.3%)
41-50	13	3	16 (45.7%)
51-60	5	0	5 (14.3%)
61-65	3	0	3 (8.6%)
Total	31	4	35 (100%)

Table II. – Distribution of the tested by age, present pain, work on a computer and physical inactivity.

Age	Frequency	Uses a computer	Physical inactivity	Present pain
25-30	6	4	6	4
31-40	5	4	4	5
41-50	16	14	14	13
51-60	5	2	5	3
61-65	3	1	2	3
Total	35	23 (65.7%)	31 (88.6%)	28 (80%)

Table III. – Frequency of a positive test regarding the questionnaire parameter at age group 41-50.

Age 41-50	Positive diagnosis	Examination
16	12	Positive test 1
16	12	Positive 3
16	13	Present pain
16	14	No physical activity
16	8	Increased chest kyphosis
16	10	Reduced spinal mobility

It can be concluded the following: the pain was present at 80%, the physical inactivity scored 88.6% and at a computer works 65.7%. As for the daily activity of a computer the largest percentage was 6 hours per day, *i.e.* 18 (51%) from the tested.

From the clinical examination: Test 1 is positive at 29 (82, 6%), the test 2 is positive at 6 (16%); the test 3 is positive at 20 (57%) and test 4 by 13 (37%).

From the examination with the software program we gained the following data: 17 (51%) had increased chest kyphosis and changed mobility of the spine is found at 22 (62, 5%).

The data regarding the positive test or diagnosis: test 1, test 3, uses computer, present pain, physical inactivity, increased chest kyphosis and reduced mobility we took only for the adult group 41-50 because they are the most frequent regarding the presence. With Chi-Square Test is gained  $p=0.0165$   $p<0.05$  the results are presented Table III.

The population which we chose for research had the factors for risk for bad posture and pain and that is the long forced position on a computer and physical inactivity. In the questionnaire we used the key moments: daily work with a computer, pain and physical inactivity<sup>1,3</sup> that is requested as an external factor in the consulted studies for bad position. In the clinical examination we used the generally accepted and standardized clinical tests for analyses of the position as well as a modern software program.<sup>4,6</sup> At the examination with the software there were taken standards for examinations already confirmed from other studies.<sup>4,5</sup> The long forced positions and the physical inactivity are in the correlation with the present pain which is dominant symptom as well

as the consulted studies.<sup>2,3,7</sup> More studies suggest ergonomic measures for prevention of the pain in the spine when working with a computer.<sup>7-10</sup> We did not use such data in order to compare because they request EMG diagnostics. We used software in order to confirm the condition of the spine curve in sagittal plain as a sign of an appearance of bad posture and that is already applicable.<sup>4-6</sup>

In the consulted studies the pain is analyzed in the spine by segments and it is from 74-13% depending on the localization and it is generally taken and it is 80%.<sup>1-3</sup>

## Conclusion

With the analyses of the gained results it can be made the following conclusion: In the most present age group the pain is dominant symptom together with the bad attitude, then the physical inactivity and the daily activity on a computer are over 50% of the tested. The work on a computer, present pain and physical inactivity, it was found that they are in correlation with the positive clinical examination and the confirmed bad position.

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