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## **The effect of Kinesiology Taping on overload pains in employees of the Provincial Integrated Hospital in Toruń**

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### **Abstract**

The aim of this study was to determine whether Kinesiology Taping is an effective method to combat lumbar spine related to overload, and how its application affected the pain of two professional groups of the hospital: administrative staff and medical personnel.

The study included 80 employees of the Provincial Integrated Hospital in Toruń complaining of pain, related to overloading of the lumbar spine. Among the respondents there were 73 women, which accounted for 91% of the respondents and 7 men, which accounted for 9% of the respondents. The method that was used in the study was Kinesiology Taping. The numerical scale - NRS was used to assess the pain, with the help of which the subjects determined the level of their pain before the first application, during and after application. The fingers-floor test and the Schober test were used to determine changes in the mobility of the lumbar spine. Tests were performed before and after application.

The case studies have shown that Kinesiology Taping is an effective method to combat lumbar spine pain.

## **Introduction**

Spinal diseases are a common condition in Poland. Research shows that every third inhabitant of our country complains about backache. Excessive occupational load: lack of workplace ergonomics, movement with an incorrect stereotype, limitation of mobility in a specific anatomical region or excessive loading of tissues may cause overloading diseases. [1,2]

Spine diseases occur both in people who are hard-working and who spend many hours during the day at the computer. [3]

The nagging pain causes us to think about various new methods in medicine, and they indicate that pain can be effectively reduced. The popularity of the Kinesiology Taping Method, associated with the effectiveness of the patch in many different ailments including muscles and joints, cardiovascular system, lymphatic system as well as the nervous system, prompted me to do this job. [4,5]

In practice, all the possibilities of the tape used in the Kinesiology Taping method have not yet been checked. [4]

## **Aim**

The aim of this study was to determine whether Kinesiology Taping is an effective method to combat lumbar spine related to overload, and how its application affected the pain of two professional groups of the hospital: administrative staff and medical personnel.

## **Material and methods**

The study included 80 employees of the Provincial Integrated Hospital in Toruń complaining of pain, related to overloading of the lumbar spine. Among the respondents there were 73 women, which accounted for 91% of the respondents and 7 men, which accounted for 9% of the respondents. The average age of the respondents was 48 years. During recruitment, two groups of employees were created for the study: medical personnel (nurses, midwives, physiotherapists) and administration employees (accountants, reference persons, medical recorders). Each group consisted of 40 people.

The method that was used in the study was Kinesiology Taping. The veneers were carried out using the muscle method on the lumbar spine. The base was glued near the base of the sacrum and the fifth lumbar vertebrae, tails parallel to the spinous processes of the spine, in the distance of the muscle attachments (flexion with the rotation of the torso).

The numerical scale - NRS was used to assess the pain, with the help of which the subjects determined the level of their pain before the first application, during and after application. The fingers-floor test and the Schober test were used to determine changes in the mobility of the lumbar spine. Tests were performed before and after application.

## Statistical methods

The statistical analysis of the collected data was carried out in the Statistica 10.0 program. For the analysis of the test, the floor fingers were used to test the parametric two averages, because the Shapiro-Wilk test resulted in the normal distribution data. For the Schober test, the bite from the Shapiro-Wilk test resulted in the fact that we do not deal with the normal distribution data. Therefore, a nonparametric test was carried out for the verification of the hypothesis, a test for differences in the sum of Wilcoxon rank that met the criteria of the collected data. When testing the improvement of the extension, a character test was used, which is a non-parametric test, based on signs of differences between the studied populations. It is a non-parametric equivalent of the student's parametric T-test. Examines the difference between the first and second group of data. The choice of this test was the motivated result of the Shapiro-Wilk test, which showed that we do not deal with the normal distribution. In this study,  $p < 0.05$  was assumed as the level of statistical significance.

## Results

The result of the test on the NRS scale of the subjects, before the application, ranged from 2 to 10 and was on average  $6.17 \pm 1.62$ . The result of the NRS scale in the group of administrative employees before the application ranged from 3 to 10 and was on average  $6.1 \pm 1.82$ . The result of the NRS scale in the group of medical personnel before the application was in the range from 2 to 9 and was on average  $6.25 \pm 1.40$ .

**Table 1. NRS values before application.**

NRS values before application	Descriptive statistics								
	n	$\bar{x}$	Me	Min.	Max.	Q1	Q3	V	SD
Administration employees	40	6,1	6	3	10	5	7	30%	1,82
Medical staff	40	6.25	6	2	9	5	8	23%	1,40
Total	80	6,17	6	2	10	5	7	26%	1,62

n - number of observations;  $\bar{x}$  - average arithmetic; Me - median; Min. - minimum; Max - maximum; Q1 - lower quartile; Q3 - upper quartile; V - coefficient of variation, SD - standard deviation.

The results of the NRS scale survey, after the change of application, ranged from 0 to 8 and averaged  $3.55 \pm 1.53$ . The results of the study on the NRS scale in the group of administrative employees after changing the application were in the range of values from 0 to 8 and were on average  $3.7 \pm 1.54$ . The results of the NRS scale in the group of medical personnel after the change of application ranged from 1 to 7 and were on average  $3.4 \pm 1.53$ .

**Table 2. NRS values after application.**

NRS values after application	Descriptive statistics								
	n	$\bar{x}$	Me	Min.	Max.	Q1	Q3	V	SD
Administration employees	40	3,7	4	0	8	3	5	42%	1,54
Medical staff	40	3,4	3,5	1	7	2	4	45%	1,53
Total	80	3,55	4	0	8	3	5	43%	1,53

n - number of observations;  $\bar{x}$  - average arithmetic; Me - median; Min. - minimum; Max - maximum; Q1 - lower quartile; Q3 - upper quartile; V - coefficient of variation, SD - standard deviation.

The distance-to-floor distance measurement before and after application has been compared, the value of differences before and after is shown in centimeters. The average measurement value before application was 18.5 centimeters  $\pm$  8 centimeters. After application, the measurement was on average 16 centimeters  $\pm$  7.87 centimeters.

**Table 3. The results of the to-floor test before and after application.**

	Descriptive statistics								
	n	$\bar{x}$	Me	Min.	Max.	Q1	Q3	V	SD
Measurement I	80	18,57	19	1	39	13,25	23,75	0,43	8,16
Measurement II	80	16.16	17,5	0	38	10,25	20	0,48	7.87

n - number of observations;  $\bar{x}$  - average arithmetic; Me - median; Min. - minimum; Max - maximum; Q1 - lower quartile; Q3 - upper quartile; V - coefficient of variation, SD - standard deviation.

**Table 4. Schober test results before and after application.**

	Descriptive statistics				
	n	$\bar{x}$	Me	Min.	Max.
Measurement I	80	13,1	13	11	15
Measurement II	80	13,4	13	11	15

n - number of observations;  $\bar{x}$  - average arithmetic; Me - median; Min. - minimum; Max – maximum.

## Discussion

The pain is undoubtedly one of the most important health problems. It is worth looking for new methods that will knock him out. However, it should be remembered that a healthy lifestyle, adequate ergonomics of work will avoid pain. [8-11]

Overload pain initially passes after time (after rest). However, continuous loading of seemingly healthy tissues can cause serious disturbances and, consequently, can lead to serious diseases.

Obtained results of the study confirmed the effectiveness of the Kinesiology Taping Method. Similar conclusions will appear in Słowińska in the study of office workers. It states that Knesiology Taping should be used as a method of supporting other forms of pain therapy. [3]

Among the respondents, pain after application was diminished, but administrative employees were still experiencing pain with more seniority. It can be stated that physical work is conducive to pain, because the greatest pain occurs after working with medical workers, and static work is not conducive to our body causing pain because the greatest pain occurs when working with office workers. Similarly, Malasiewicz states in his study that the pain depends on the type of work performed, it is also related to the aging of the population. [12]

My hypothesis was confirmed that the range of motion of the lumbar spine did not change substantially, similarly Słowińska stated in her study that the use of the Kinesiology Taping method resulted in the reduction of pain. [3]

In my research, it turned out that the better results in the test, the fingers of the floor were achieved by administrative employees, characterized by less physical activity. However, Kuszewski states, on the contrary, that people with greater activity obtained better results in the fingers test on the floor. [13]

As for the mobility of the lumbar spine, in my research it turned out that after applying the patches, it increased. Similarly to Słowińska, the mobility of the spine has increased. [3]

## **Conclusions**

1. The pain discomfort decreased after applying patches.
2. After the application, the type of pain related to activities such as standing, getting up from a sitting position, sitting, walking, sleeping, turning from side to side has been reduced.
3. The mobility of the lumbar spine increased after application of the patches. A greater increase in the scope of movables was with administrative employees.

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