SUMMARY

Coping with pain plays a very important role in human life and it may differ depending on the personality characteristics of patients such as their level of optimism. The aim of this study was therefore to determine whether the coping strategies for cervical spine pain among office workers were determined by gender, the locus of pain control or an optimistic attributional style.

30 office workers (Females = 15, Males = 15) took part in the experiment. The age of the participants was for females (M=43; SD=5.9) and for males (M=44.9; SD=4.9). The subjects were asked to fill out 4 questionnaires: (CSQ), (BPCQ), (ASQ), a 10-grade visual analogue scale (VAS) and an original questionnaire.

The study revealed that most of the office workers declare the ability to cope with pain. Women were significantly more focused on emotions as a pain coping strategy than were the male participants. It was also shown that the internal locus of pain control significantly correlates with coping focused on problem solving. Participants characterized by an optimistic attributional style used task oriented strategies more often than did the pessimists. There were no significant differences in the level of perceived pain between optimists and pessimists.

It was found that there are statistically significant differences in coping with pain according to gender. Women were significantly more focused on emotions as a pain coping strategy than were the male participants. A high level of optimism may have a significant impact on the reduction of emotion-oriented strategies such as catastrophising by switching on more beneficial strategies to cope with pain by the individual. There are no significant differences in the level of perceived pain between pessimists and optimists.

Key words: optimists, pessimists, coping with pain, problem solving
BACKGROUND

Pain in the cervical spine of office workers is a very common problem in society and constitutes a huge medical and social challenge. The progress of civilization and facilities such as cars or elevators in buildings contribute to a limiting in physical activity. According to data from the Central Statistical Office, the cervical spine in 2009 was the second most frequent locus of pain after the lumbar region. Every ninth adult in Poland complains of neck pain (GUS 2009). The number of people working in offices has significantly increased in recent years. Office work is a sitting job that requires the use of a computer. These two factors contribute significantly to an overloading of the spine. The long immobility that takes place while performing office work causes static disturbances within the joints and muscles, which results in the appearance of pain complaints that lower the quality of life, and which become a frequent cause of absence from work. Many epidemiological studies confirm the relationship between systematic computer work and the occurrence of pain in the upper spine with the risk of overloading (Jansen 2003, Klussmann et al. 2008, Gerr et al. 2004). Research on cervical spine pain has shown that pain in this area of the body has both a biomechanical and psychological background (Randal et al. 2002). Negative emotions connected with long-lasting stress from, for example, the suppression of one’s needs, problems or concealing one’s own opinions could be the psychological background which induces adverse changes in the whole organism. Persistent mental problems could affect both the internal organs and the movement apparatus causing asymmetrical and chronic muscle tension of mainly the postural muscles called „stress muscles” (Rakowski 2003). Modern medicine following on from positive psychology associates the level of pain experienced by a patient with the psychological factor such as the level of optimism, and more precisely the optimistic level of attribution. There are studies confirming the relationship between the level of optimism and coping with difficult situations (Wilkęńska et al 2016, Linley, Joseph, 2007, Carr, 2004).

According to some researchers, the appropriate attitude towards pain may reduce its intensity, but not everyone is able to cope with this. As a result of feeling anxiety and helplessness, some patients undertake poorly effective strategies which actually intensifies their suffering. For example, trying to escape from the problem or pretending that the unfavorable situation does not concern them or, conversely, focusing too much on the perceived problems. It is believed that the most effective approach is to undertake task - oriented strategies aimed at seeking information that may affect the situation and distract attention from the pain (Taylor et al 2003, Walden-Gałuszko 2007, Kwissa-Gajewska et al. 2014). According to research by Ramirez-Maestre, people who choose an active way of coping experience significantly lower pain when compared to those who prefer a passive approach to coping, which is confirmed to negatively influence everyday functioning (Ramirez-Maestre et al. 2009). Moreover, according to a study by Suchocka, people focused on problem-solving, despite intense pain, are sig-

268
significantly more motivated to face the pain than those who use other coping methods. In turn, focusing on negative emotions leads to withdrawal from the everyday life activities that once gave them pleasure as well as experiencing more acute pain (Suchocka 2007, 2008).

Therefore, pain patients should be made aware of the mental attitude which could positively affect their health and life satisfaction.

**Study aim**

The aim of this study was to define the pain coping strategies of office workers who suffer from cervical spine-related ailments and their level of optimism as well as the differences in perceived neck pain depending on the preferred attributable style.

**MATERIAL AND METHODS**

**Participants**

The group of respondents consisted of 30 office employees between the ages of 35 and 51. 15 men and 15 women participated in the study. The average age in both groups is shown in Table 1.

Seniority in the study group ranged from 8 to 25 years. The average data is described in Table 2.

The average time spent using a computer by the office workers ranged from between 7 and 10 hours. The average values are shown in Table 6.

The majority of the participants had a higher education, as 90% of respondents, while 10% had a secondary education.

The office workers who participated in the study had been suffering from cervical spine pain for more than three months. The employees came from various regions of Poland. They worked in the Pomeranian province in such positions as: a forwarder, secretary, bank employee, city office employee. The lack of sta-

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of participants</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>15</td>
<td>43.0</td>
<td>5.9</td>
</tr>
<tr>
<td>Males</td>
<td>15</td>
<td>44.9</td>
<td>4.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of participants</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>15</td>
<td>16.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Males</td>
<td>15</td>
<td>18.1</td>
<td>5.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of participants</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>15</td>
<td>8.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Males</td>
<td>15</td>
<td>9.1</td>
<td>1.0</td>
</tr>
</tbody>
</table>
statistically significant differences in age, education, seniority and the number of hours of computer use during the day depending on sex allows one to treat the group of respondents as homogeneous.

**Methods**

The study used standardized research methods and an author’s imprint:  
*The Coping Strategies Questionnaire (CSQ)* (Rosenstiel & Keefe 1983) in the Polish adaptation by Juczyński. This contains 42 items assessing patient self-rated use of cognitive and behavioural strategies to cope with pain. It comprises six subscales for cognitive strategies and one subscale for behavioural strategy that are part of three factors: taking substitute activities, cognitive coping and focus on emotions (Juczyński 2001).

*The Beliefs about Pain Control Questionnaire (BPCQ)* (Skevington, 1990) the Polish adaptation by Juczyński. This consists of 13 statements which form 3 subscales that measure the power of individual beliefs regarding pain management: internally (internal factors), through doctors (powerful others), and chance events (Juczyński 2001).

*Attributional Style Questionnaire* is a questionnaire developed by Seligman (1998). This is used to define an individual style of explaining the successes and failures of events. It consists of 48 statements that allow one to determine the level of optimistic or pessimistic style for explaining both successes and failures (Seligman, 2007).

*The Visual – Analogue Scale (VAS)* is used to assess the degree of pain intensity. The scale is created by a 10-point horizontal line. The subject’s task is to mark the point on the line which corresponds to the intensity of the pain experienced, where the value 0 means a complete absence of pain, and the value of 10 the strongest pain that can be imagined (Dobrogowski, Wordliczek 2007).

The author’s imprint contains five questions which allowed one to collect data on the respondents’ gender, age, type of education and job activity such as seniority and the number of hours of computer use during the day.

**Study procedure**

Surveys and answer cards were distributed in person to 30 office employees. 15 men and 15 women received answer cards. The respondents were informed about the purpose of the research and were instructed on how to complete the questionnaires. One day after the questionnaire was distributed, the completed answer cards were collected.

**Data analysis**

Statistical analysis were conducted using Statistica 12. Descriptive statistics were used to summarize the results obtained in specific samples (the mean with standard deviation) The initial analysis of the relationship between variables was done using the r-Pearson’s correlation. Means comparison was done using the Student’s t-test. The assumed significance level for all analyses was p <0.05.
RESULTS

The first step of the study analysis was a comparison of the average values of pain coping strategies for office employees depending on gender. The results on the preferred strategies for coping with pain are presented in Table 1.

The analysis shows that most often the pain coping strategy is a coping self statement regardless of gender.

Nevertheless, sex differences appeared in coping focused on emotions and the results are presented in the Table 5.

Studies have shown that there are statistically significant differences between the sexes in terms of coping strategies. Women more often than men choose strategies focused on emotions.

The correlations between the internal locus of pain control and taking substitute activities for pain coping are presented in Table 3.

As a result of Pearson’s correlation study, it turned out that there is a strong positive correlation between the internal locus of pain control and the active strategies of coping with it by office workers. This means that the higher the internal locus of pain control, the higher the diverting of attention and level of behavioural activity.

Another analysis concerns the differences in coping with pain as taking substitute activities between pessimists and optimists.

Statistical analysis showed that participants characterized by an optimistic attributional style choose an active way of coping significantly more often than do pessimistic participants. Which means that they try to focus their attention on other problems than pain and here also behaviourally.

The statistical analysis did not show any significant differences among optimists and pessimists in the level of perceived pain.

Table 4. The arithmetic mean of pain coping in women (N = 15) and men (N = 15)

<table>
<thead>
<tr>
<th>GENDER</th>
<th>FEMALES (N=15)</th>
<th>MALES (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverting attention</td>
<td>17.2</td>
<td>15.8</td>
</tr>
<tr>
<td>Reinterpretation of pain</td>
<td>10.7</td>
<td>13.6</td>
</tr>
<tr>
<td>Catastrophising</td>
<td>10.9</td>
<td>9.2</td>
</tr>
<tr>
<td>Ignoring pain</td>
<td>19.7</td>
<td>13.7</td>
</tr>
<tr>
<td>Praying/hoping</td>
<td>19.3</td>
<td>6.5</td>
</tr>
<tr>
<td>Coping self - statements</td>
<td>20.4</td>
<td>16.4</td>
</tr>
<tr>
<td>Increasing behavioural activity levels</td>
<td>17.8</td>
<td>14.5</td>
</tr>
</tbody>
</table>

Table 5. The result of the Student’s t-test for coping with pain focused on emotions between women (N = 15) and men (N = 15)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of participants</th>
<th>M</th>
<th>SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>15</td>
<td>15.1</td>
<td>4.2</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Males</td>
<td>15</td>
<td>7.9</td>
<td>4.7</td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Correlations between the internal locus of control and taking substitute activities in study group

<table>
<thead>
<tr>
<th>Variables</th>
<th>Internal locus of pain control</th>
<th>Taking substitute activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal locus of pain control</td>
<td>-</td>
<td>0.697*</td>
</tr>
<tr>
<td>Taking substitute activities</td>
<td>0.697*</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 7. The result of the Student's t-test for active coping with pain between optimists (N=13) and pessimists (N=17)

<table>
<thead>
<tr>
<th>Attributional style</th>
<th>Number of participants</th>
<th>M</th>
<th>SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimists</td>
<td>13</td>
<td>22.5</td>
<td>6.5</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Pessimists</td>
<td>17</td>
<td>11.6</td>
<td>4.4</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

The effectiveness of coping with the pain strategies which are used by patients in difficult situation depends mainly on the nature of the stressful situation and on the extent to which one has the ability to control adverse events (Juczyński 2001). The conviction about one’s own ability to influence the level of perceived pain depends on specific, individual factors strengthening or weakening the feeling of pain (Walden-Gałuszko, Majkowicz 2003).

The most frequently used strategies for pain coping among office workers with cervical spine complaints are coping self – statements, ignoring pain and diverting attention. The results of these studies are similar to those of Juczyński where patients with degenerative changes of the spine usually chose the same strategies: strategies such as a coping self – statements and ignoring pain (Juczyński 2001). The obtained results also confirmed that women are more likely to take emotion – oriented strategies. A study conducted in dental patients who were accompanied by pain also showed that women more often than men undertake strategies which help with regulating emotions (Malarz et al. 2015). Also a study carried out among patients with degenerative changes in the hip joint, where the majority of the respondents were women, confirms the high manifestation of strategies such as praying and hoping as the most common ways of dealing with pain among females patients (Andruszkiewicz 2008). The systematic review conducted by El-Shormilisy et al., shows that not all studies confirm that women have a greater tendency to prefer strategies focused on emotions. Nevertheless, many authors state the relationship between gender and the choice of pain coping strategies (El-Shormilisy et al. 2015). For women, it is characteristic to turn to religion and seek help in praying at the moment of unfavourable events. In addition, studies by Hayati and Mahmoodi confirm that strategies to regulate emotions are often associated with conditions where pain is the dominant symptom (Hayati, Mahmoodi 2008).

The next stage of the study was to check whether the internal locus of pain control positively correlates with the level of active coping strategies. It is believed that the attitude of the individual as to the impact of their own abilities on the course of events in life helps to reduce the feeling of helplessness and helps them to cope better at the time of pain (Walden-Gałuszko, Majkowicz 2003). The results obtained in the described study confirm earlier results. The analysis showed a high positive correlation between the internal locus of pain and active pain coping in studied group. These results are also confirmed by a study performed on patients with rheumatoid arthritis (Ogińska-Bulik, Gurowiec 2002).
The last step of this work was to verify whether there were differences in the pain coping between optimists and pessimists. The analysis of the results has shown that optimists are much more likely than pessimists to choose strategies based on an active way of coping like diverting attention and behavioural activity. This means that people with an optimistic attribution style make an effort to eliminate the pain by task-oriented strategies when compared to pessimists. Some other research shows a significant relationship between a high level of optimism and greater hope and a higher degree of acceptance of the disease, which translates into the use of active coping strategies. According to many researchers, optimists during adverse events related to their health usually declare an active way of coping and take substitute actions not avoiding or denying the problem (Goodin, Bulls, 2013). Studies carried out by Polish authors among patients with rheumatoid arthritis also demonstrate the importance of optimism for pain coping. According to the results, patients with an optimistic approach to life used increased behavioural activity and did not focus on the pain (Kwissa-Gajewska et al. 2014).

These results might be interpreted according to the microgenetic theory of symptom formation in neuropsychology (Pąchalska et al 2017).

CONCLUSION

1. There are statistically significant differences in pain coping according to gender. Women are more likely than men to choose strategies focused on emotions such as catastrophizing and praying/hoping.
2. There is a high positive correlation between the internal locus of pain control and active pain coping among office workers.
3. There are statistically significant differences between pessimists and optimists in strategies for coping with pain. Optimists are much more likely to choose an active way of coping such as diverting attention and using increased behavioural activity.
4. In the study group there are no significant differences in the level of perceived pain between pessimists and optimists.

REFERENCES

Wilczyńska et al. Pain management and optimism levels…

GUS: Stan Zdrowia Ludności w 2009 r., Warszawa 2011.
Juczyński Z., 2001, Narzędzia pomiaru w promocji psychologii zdrowia, Warszawa: Pracownia Testów Psychologicznych PTP.
Suchocka L., 2007, Psychologiczna analiza cierpienia w chorobie przewlekłej, Lublin: Towarzystwo Naukowe KUL.

Address for correspondence:
Marcin Dornowski,
Department of Sport, Gdansk University of Physical Education and Sport
Kazimierza Górskiego 1
80-335 Gdansk,
Poland; mdornowski@awf.gda.pl

274