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# The impact of comprehensive physical therapy performed on an outpatient basis on the quality of life of patients with low back pain

# Wpływ kompleksowej fizjoterapii prowadzonej w warunkach ambulatoryjnych na jakość życia pacjentów z zespołem bólowym kręgosłupa

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A. The preparation of the research project; B. collecting the data; C. statistical analysis; D. interpretation of data; E. preparing the manuscript; F. developing literature: G. raise funds.

**Słowa kluczowe:** kompleksowa fizjoterapia, fizjoterapia ambulatoryjna, jakość życia, kompleks lędźwiowo – krzyżowy
**Keywords:** comprehensive physiotherapy, outpatient physical therapy, quality of life, complex lumbar – sacra

**WPROWADZENIE**. Dolegliwości bólowe dolnego odcinka kręgosłupa to problem, który należy rozpatrywać wielopłaszczyznowo – nie tylko ze strony medycznej, ale również społecznej i zawodowej. Schorzenia te ograniczają bowiem sprawność fizyczną i przyczyniają się w konsekwencji do pogorszenia jakości życia. **CEL PRACY.** Celem pracy była ocena i porównanie jakości życia pacjentów z zespołem bólowym odcinka lędźwiowo-krzyżowego kręgosłupa przed zabiegami rehabilitacji ambulatoryjnej i po ich zakończeniu. **MATERIAŁ I METODYKA**. W badaniu wzięło udział 70 pacjentów (34 kobiety i 36 mężczyzn), którzy byli poddani przez okres 10 dni serii zabiegów fizjoterapii ambulatoryjnej. Średnia wieku grupy badanej wynosiła 58,26 lat, a średnie BMI było równe 27,78 kg/m$^2$. Badania przeprowadzono metodą sondażu diagnostycznego w oparciu o autorski kwestionariusz ankiety zawierającej dane społeczno-demograficzne. W celu określenia natężenia bólu wykorzystano analogowo – wzrokową skalę bólu VAS, a do oceny jakości życia kwestionariusz ODI (*Oswestry Disability Index*). Analizę statystyczną wykonano w programie Statistica. **WYNIKI BADAŃ**. Jakość życia badanych przed przystąpieniem do zabiegów wynosiła 21,13 w skali ODI, a po serii zabiegów – 14,73. Średnia wartość dolegliwości bólowych wyrażonych w skali VAS przed przystąpieniem do zabiegów wynosiła 6,73 a po zabiegach 4,27. W obu tych przypadkach odnotowaną statystycznie istotną różnicę przed i po zabiegach na poziomie $p<0,01$. Wykazano również słabą, dodatnią korelację pomiędzy jakością życia wyrażoną w skali ODI a poziomem dolegliwości bólowych $p<0,01$, $r = 0,362$). **WNIOSKI**. Kompleksowa fizjoterapia

prowadzona w warunkach ambulatoryjnych w sposób statystycznie istotny wpływa na jakość życia badanych.

**INTRODUCTION**. Pain in the lower spine is an issue that should be considered on many levels - not only from the medical but also social and professional. Disease They limit the physical and consequently contribute to the deterioration of the quality of life. **AIM OF THE TESTS.** The aim of the study was to evaluate and compare the quality of life of patients with pain syndrome lumbar-sacral spine outpatient rehabilitation treatments before and after. **MATERIALS AND METHODS**. The study involved 70 patients (34 women and 36 men) who were subjected for 10 days a series of outpatient physiotherapy. The average age of the study group was 58.26 years and a mean BMI was equal to 27.78 kg / m2. Studies performed by a survey tool, based on an original questionnaire containing socio-demographic data. In order to determine the intensity of pain was used analog - visual scale VAS pain, and to evaluate the quality of life questionnaire ODI (Oswestry Disability Index). The statistical analysis was made using Statistica. **RESULTS**. Examined the quality of life before treatment was 21.13 on a scale ODI, and after a series of treatments - 14.73. The average value expressed in pain VAS before treatment was 6.73 and 4.27 after surgery. In both cases there was a statistically significant difference before and after the level of $p < 0.01$. Also showed a weak positive correlation between the quality of life expressed on a scale ODI and the level of pain $p < 0.01$, $r = 0.362$). **CONCLUSIONS**. Comprehensive physical therapy performed on an outpatient basis in a statistically significant impact on the quality of life of patients.

**INTRODUCTION.**The concept of quality of life in medical science appeared in the seventies and the nineties was inextricably bound with the concept of health. There are many models of quality of life related to health, disease processes and aging. The three most common are: model of Wilson and Cleary, Ferrans model and the model of the WHO ICF (International Classification of Functioning, Disability and Health World Health Organization) [1]. Model WHO defines quality of life as "a sense of the individual as to its position in terms of cultural life and value system in which he lives with respect to its performance, expectations, standards and interests [1,2]. In medical science, but often for the concept of quality of life depends on the health status of HRQoL (ang. Health-related quality of life) [3,4]. In the field of assessment on the part of the patients are not only the effects of the applied therapy, but also the course of rehabilitation, which is an integral part of recovery. The measure in this case remains the improvement in daily functioning, increased life competence, which improves the well-being and, consequently, quality of life [5]. This gives an important addition to the medical examination particularly useful in the treatment of chronic diseases [6]. The measure in this case remains the improvement in daily functioning, increased life

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Pain lumbar-sacral spine, which partly radiate to the buttocks is often assumed called low back pain - Low back pain (LBP). These problems relate to 85-95% of the population, regardless of age [7,8]. Despite this prevalence of this phenomenon it is a very big problem, both diagnostically and therapeutically. In patients presenting to doctors' offices rarely isolated one specific cause of back pain, and medicine classifies about 100 different causes of these ailments. Specific pain is caused by a specific disease, a nonspecific occur without a precise causes of [9]. In the system osteoarthritis agents most often result in pain are the intervertebral discs, ligaments and facet joints [9,10]. In the system of long-lasting muscle pain can be caused by a defensive reflex muscle tension to excessive effort and overload. Component of the nervous system must be considered in conjunction with other elements of the additional compression that cause the symptoms of root, because the same nerve roots produce symptoms of pain only as a result of swelling and inflammation. Mental element while the two tracks to be seen as a typical reaction to pain as well as a masking beginning of depression [9]. Regardless of the classification should always remember that pain is the only symptom, and to destroy it first diagnose the disease. because the same nerve roots produce symptoms of pain only as a result of swelling and inflammation. Mental element while the two tracks to be seen as a typical reaction to pain as well as a masking beginning of depression [9]. Regardless of the classification should always remember that pain is the

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Pain in lower back beyond the structural factors are often caused by a number of conditions beyond spinal or neurogenic, and to determine their exact cause is a great challenge, because they share comparable symptoms. Most, however, there are three pathologies causing them - the same spine, sacroiliac joint and hip joint, which may be present as a single disorder or simultaneously coexist with each other [11]. Hence the division of radicular pain in the first case and in two consecutive pseudoradicular. To differentiate is needed thorough analysis of etiology, causes of pain and pathological mechanism of its functioning [12].

Pains root tests are the basis for the study of neurological supplemented imaging techniques - x-ray or MRI. However, we must remember that the pathologies occurring in the images are not always the cause of our problems [13]. Indeed, statistics show that 16-30% of the cross soreness has its cause in disorders of the sacroiliac joints [14]. Rzekomokorzeniowy pain caused by the joint in the same range as the radiation pressure or inflamed nerve roots L4-S1 sciatic nerve [15]. This explains why we are not able to distinguish between these disorders, because according to the theory of convergence nerve impulses are transported to the brain the same way from the neural sensory neurons, but from different sources. So while blocking joint pain radiates to the lumbar spine, buttock and knee - occasionally to the ankle. In the case of joint hypermobility pain affects the sacral spine and hips. So we have the typical symptoms similar to sciatica, but from a completely different disease [16].

Similar disturbances can also cause the so-called. pain of visceral origin projected. Some diseases urological disorders since they give a lower back radiating sometimes up to the groin. Similar relationships may be observed in diseases of the pelvic and reproductive system, digestive system or even [17].

Although back pain refer to the majority of society and constitute a serious health problem, Due to their diverse etiology, there is no clear way of treating them. Depending on the course and severity of the disease, we can use a wide range of physiotherapy treatments. However, we must remember that more than 90% of pain is lower back injury substrate against mechanical overload and inflammation is the result of [18]. In the first place we should relieve painful structure, and then with knowledge of the biomechanics of the normal seek treatment [19]. In acute sciatica able to liquidate inflammation and try to reduce the pain by a few days rest in a position relieving section of the lumbosacral spine, and if necessary we support the pharmacological treatment. Longer lying is unfounded and should be as soon as possible to return to their natural activities of daily life and begin proper rehabilitation [9.20]. In diseases of the lower spine physical procedures use both analgesic and anti-inflammatory treatments, kinesitherapy to restore muscle balance, normal range of motion of joints, or relaxing massage-relaxation. We can also use manual therapy treatments or relieve weakened muscles tapingiem. Unfortunately, some cases of back pain are caused by such diseases, the removal of which must be completed surgical treatment [9]. In diseases of the lower spine physical procedures use both analgesic and anti-inflammatory treatments, kinesitherapy to restore muscle balance, normal range of motion of joints, or relaxing massage-relaxation. We can also use manual therapy treatments or relieve weakened muscles tapingiem. Unfortunately, some cases of back pain are caused by such diseases, the removal of which must be completed surgical treatment [9]. In diseases of the lower

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**AIM OF THE TESTS.** The aim of the study was to evaluate and compare the quality of life of patients with pain syndrome lumbar-sacral spine before and after a series of physiotherapy carried out in an outpatient setting.

**MATERIAL AND METHODS.**The study group consisted of 70 people (34 women and 36 men). The average age of the study group was 58.26± 11.01 years. The study was conducted in the period from November 2016. March 2017. In two centers providing outpatient physical therapy services in Goleniów and Nowogard. The research was conducted in two stages. The first one was carried out on patients start treatment outpatient rehabilitation prior to their implementation, and the other after 10 days of outpatient treatment after the last treatment. Participation in the survey was anonymous and was voluntary. Patients completed a questionnaire on the spot in the presence of a researcher who could provide assistance on a regular basis and explain the uncertainties regarding the survey. Six people dropped out due to breaking the cycle of physical therapy.

In order to determine pain intensity applied graphic-analog visual pain scale (VAS called. Visual Analogue Score). To assess the quality of life of patients with pain as low back ODI questionnaire was used, which contained questions relating to the essential details of the quality of life.

The results were used to develop a statistical program Statistica 13.1. First checked the normality of distribution using the Shapiro-Wilk test. When ordinal

variables and quantitative but deviating from a normal distribution with two attempts dependent Wilcoxon test was used. Data analysis of a nominal Chi square test was used. Depending on the evaluation of the nominal and ordinal variables were made using Spearman correlation. Statistically significant results for the values of p <0.05. To describe the variables in the groups of women and menusing the average () and standard deviation (SD). Figures and description of the group variances were performed using Excel 2013.$\bar{X}$

**RESULTS.**The survey assesses the quality of life of people with pain as lumbosacral spine. Before the treatments studied people with an average group classifications to persons with disabilities mediocre - 21.13 points (15-24 points). After a series of outpatient physiotherapy in their responses subjects showed significant improvement in quality of life compared with the assessment before treatments (p <0.01), and their average level of 14.73 points systematyzował them in the upper compartment with a small group of disability (5-14 points ).

Table 1. Analysis based on the results of the questionnaire ODI before and after outpatient physiotherapy for the entire study group.

| | **before surgeries the whole group** | | | **after surgery the whole group** | | | **p** |
|---|---|---|---|---|---|---|---|
| | **n** | **$\bar{X}$** | **±SD** | **n** | **$\bar{X}$** | **±SD** | |
| **ODI** | 70 | 21.13 | 6.86 | 64 | 14.73 | 4.98 | p <0.01 |

n - number of the group; $\bar{X}$- arithmetic average; SD - standard deviation; p-statistical significance (Wilcoxon test)

Analyzing the various spheres of life usingODI questionnaire significant improvement in quality of life manifested itself in the test in the intensity of pain in section L / S spine. Respondents felt not only reduces pain but also changing their intensity (p <0.01). In addition, the firm Filmaster visible in daily activities such as the

possibility of standing, sitting, walking, or sleeping (p <0.01), as well as the activities of care (p <0.01). Improvement of considerable significance was also recorded in the conduct of social life and passenger comfort. Only in lifting heavy objects, there was no significant difference (NS) (Table 2).

Table 2.Depending on the results of the analysis of the various aspects of life contained in the questionnaire ODI before and after outpatient physiotherapy for the entire study group

| | **before surgeries** | | | **after surgery** | | | **p** |
|---|---|---|---|---|---|---|---|
| | **n** | **$\bar{X}$** | **±SD** | **n** | **$\bar{X}$** | **±SD** | |
| **1. The intensity of the pain experienced in section L / S spine** | 70 | 3.16 | 1.10 | 64 | 2.22 | 1.11 | p <0.01 |
| **2. The ability to lift heavy objects** | 70 | 3.2 | 1.49 | 64 | 3.08 | 1.52 | NS |
| **3. The possibility of becoming** | 70 | 2.76 | 1.07 | 64 | 1.64 | 0.78 | p <0.01 |
| **4. The ability to walk** | 70 | 1.14 | 1.04 | 64 | 0.81 | 0.85 | p <0.05 |
| **5. Sitting in** | 70 | 2.56 | 1.00 | 64 | 1.64 | 1.04 | p <0.01 |
| **6. The ability to sleep** | 70 | 1.56 | 1.38 | 64 | 0.8 | 0.86 | p <0.01 |
| **7. Ability to care** | 70 | 1.13 | 1.09 | 64 | 0.61 | 0.75 | p <0.01 |
| **8. The possibility of social life** | 70 | 1.29 | 1.09 | 64 | 0.77 | 0.90 | p <0.01 |
| **9. The possibility of travel** | 70 | 1.63 | 1.01 | 64 | 1.13 | 0.77 | p <0.01 |
| **10. Change in pain intensity** | 70 | 2.71 | 1.29 | 64 | 2.05 | 0.95 | p <0.01 |

n - number of the group; $\bar{X}$ - arithmetic average; SD - standard deviation; p - statistical significance; NS - this parameter is not statistically significant (Wilcoxon test)

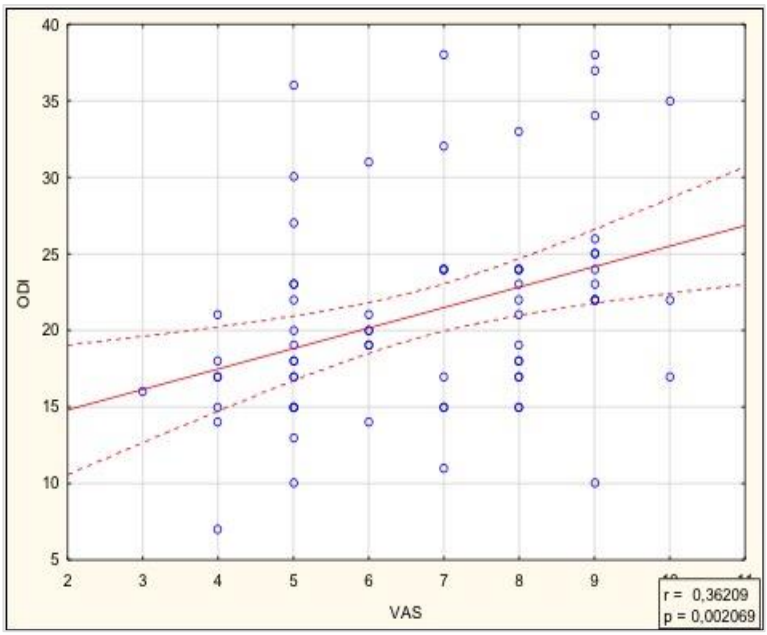
In a study inIt ykazano the pain after the application of a comprehensive outpatient physical therapy were significantly reduced (p <0.01).

Table 3.The arithmetic mean and standard deviation of pain VAS before and after a series of treatments.

| | before surgeries | | | after surgery | | | p |
|---|---|---|---|---|---|---|---|
| | n | $\bar{X}$ | ±SD | n | $\bar{X}$ | ±SD | |
| **VAS** | 70 | 6.73 | 1.86 | 64 | 4.27 | 1.34 | p <0.01 |

n - number of the group; $\bar{X}$ - arithmetic average; SD - standard deviation; p - statistical significance (Wilcoxon test)

We analyzed the relationship between the assessment of the quality of life questionnaire test and ODI chest pains in the VAS before and after outpatient physiotherapy. It has been shown that, before the series of treatments was significantly low statistical correlation between VAS and ODI (p <0.01, r = 0.362) (Figure 1).




correlation coefficient r; p - statistical significance (Spearman correlation)

Figure 1. Analysis based on the results of the questionnaire ODI and chest pains in the VAS scale before undergoing outpatient physical therapy and the study group.

**DISCUSSION.** Pain lumbar-sacral spine constitute a social problem not only in Poland, but all over the world. It includes millions of people pretending to be called "diseases of civilization". But the most disturbing is the fact that these diseases affect more and more younger people not just limiting their family and social life, but above all also excluding them from professional life. Reduce physical activity, sedentary lifestyle, type of work, in non-ergonomic positions, increase the pain-overload problems, which are the main cause of accelerated development of degenerative changes, degenerative and ongoing pain for years [21,22]. It is important that a holistic approach to the patient,

The study group was respondents rehabilitation in the field of physiotherapy and physical therapy. Treatment program was individually tailored for each patient and prescribed by a physician rehabilitation. The studies compared the copyright before and after a series of outpatient procedures using a questionnaire respondents ODI showed a statistically significant improvement in the assessment of the quality of life maintained. Determined Filmaster was seen in nine areas mentioned in ODI - change the strength and intensity of pain, the possibility of standing, sitting, walking and sleeping, care activities, social life and run passenger comfort. Only the result of lifting heavy objects was statistically insignificant, although these activities confer respondents fairly big problems. The respondents during the interview often explained,

Similar studies conducted a research team under the direction of Zawadka, which analyzed the performance evaluation of disorders also examined on the basis of a questionnaire ODI. They compared the two patient groups divided according to the type of active treatments - the first group was subject to mobilizacjom along with physical therapy treatments (- ultrasound, laser therapy, electrotherapy, sollux lamp irradiation) and the second group combined with physical therapy and mobilization exercises in water. Average disability for the first team was 16.85 points and 15.23 points after

surgery. In the second evaluation team prior treatments was higher 18.06 points and 17.56 points after physiotherapy. Both differences were statistically significant. With a detailed analysis of the various aspects of life outlined in the questionnaire ODI who cause difficulties in carrying out the first group of patients mentioned problems with lifting heavy objects, a short time to become comfortable or the occurrence of pain. In the second group they were - shortened seat painless, convenient travel and lifting heavy objects [25].

Topolska research team also comparing these relationships - before and after a series of physiotherapy, using two questionnaires of quality of life - ODI and Roland-Morris. It examined 319 women who suffered from chronic lower back pain. The subjects were subjected to various treatments in the field of physical therapy and physiotherapy commissioned by a specialist rehabilitation. Before the therapy the average quality of life of the ODI was 16.34 and 14.05 after treatment. This indicated a statistically significant decline in disability among subjects [26].

In researchteam led by Czenczek-Lewandowska studied a group of 50 people (25 women and 25 men) with pain syndromes of the lower spine, in which there was also a significant improvement in quality of life questionnaire ODI. The average value of the points before and after the rehabilitation amounted to 16.98, and 9.24, which meant that the degree of disability in the study group was reduced to a mediocre small. Experienced improvements in all ten domains included in the ODI - the largest Filmaster occurred in the perception of pain, and the lowest in the possibility of a comfortable seat. [27]

Other researchers - Depa and colleagues studied a group of 75 patients with chest pains in the lumbar spine. In their study, the results were not so clear - about 3% of the respondents felt the deterioration of functional activity, not 55% reported no

change, and only 42% had improvement. The functional status of the respondents has improved the most in the field of lifting heavy objects and the possibility of becoming comfortable, while the smallest improvement was in the intensity of pain [28].

Jesto yet other Kocjan results obtained studying 92 people divided into 4 subgroups, which received only the laser treatments in various positions alignment of the body. Only in the two groups was observed decrease in the level of disability when placed in a static position in hyperextension lying ahead. Interestingly the first subgroup was performed procedures, and the other in the same arrangement had treatments with placebo. Respondents addiction improve the assessment of his life decrease the intensity of pain [18].

From the above data dostępnych in the literature and the results of author's research shows that in most cases after surgery outpatient rehabilitation increase in the assessment of the quality of life maintained, the decline in disability among respondents. It should be noted, however, that it is closely linked with chest pains and lower back should be parallel to analyze these variables.

IN completed a study to measure the subjective assessment of pain intensity was used visual-analogue scale VAS - obtained results before undergoing physiotherapy outpatient and after their completion. Most people (about 55%) before the treatments felt pain above the average level, which is above 6 points in the VAS. This concerned both sexes - although in men the proportion was almost 20% lower. Kocjana confirmed observations, which found that women felt greater pain section of the LS spine than men [18]. In the second round of audit of the whole group after a series of physiotherapy pain declared only about 6% of people. There has been a significant decrease in pain intensity among both men and women by an average of 2.46 points, but the result remained above the average grade 4 VAS.

Bolach research team published the results of a similar study on a group of 95 people, including carrying out an analysis based on gender. Patients were subjected to a series of 10 treatments including magnetotherapy, laser therapy and cryotherapy and kinesitherapy. Applied physical therapy reduced pain by an average of more than 4 points in the VAS. This result was similar both in women and men. The final evaluation of the average was 2.68 for women and 3.56 for men. It was a far greater improvement in analgesic effect than the results obtained copyright [29].

Similar results presented Krawczyk-Wasielewska, which examined the efficacy of the two groups of patients physiotherapy - extending in two stages - before and after treatment physiotherapy. The first group received treatment only on the section of the LS spine, while the second section of the LS and the sacroiliac joints. There was no significant difference between concerned subgroups in this study and the results also showed a reduction of pain ailments as in our study [30].

Research on a group of 37 patients with pain syndrome LS spine segment also conducted Sapuła et al. Their rehabilitation program was conducted in the center daily and included a variety of treatments in both physical therapy and physiotherapy. Patients assessed pain intensity before and after therapy and performed functional tests: test of finger-floor and Schober test. As a result of treatment there was a statistically significant result for pain and the symptoms of root where previously they were experienced. [31]

Zawadka research team conducted a study two groups of respondents, divided by type and amount of active treatment by measuring the pain intensity VAS. The first group have a lower number of operations of the second group. But both the one and the other group surveyed pain decreased from 6.68 and 6.25 at 2.64 and 3. After the end of therapy assessment of the respondents did not exceed 6 points in the VAS. However,

better analgesic effect was visible in the first group, despite higher initial rate, which indicated a lack of quantity of procedures performed to translate their effects [25].

In terms of socio-demographic variables in the study group we observed a significant relationship between age of respondents to the evaluation of pain VAS. According to the test results obtained their higher pain they are felt by younger people. Radziszewski has shown, however, felt that the pain increased with the age of respondents. Similar results were also Topolska [32] and Tonosu [33], who besides pain assessment also studied the relationship disability index based on a questionnaire from the ODI century. They claimed that the older the person, the lower the rate of its functional state.

From the above research it shows how many factors affect the assessment of the quality of life of individuals. Medical indicators carried out in the form of functional testing, measurement ranges of motion of the spine is not everything. Added to this is a subjective assessment of the patient's pain, psychological and psychosocial factors. Hence, a number of scales and questionnaires that attempt to systematize general, carried out by the patient's quality of life assessment. It is extremely important tip for the whole group of doctors and physiotherapists to implement appropriate treatment and determine the appropriate rehabilitation [34].

**CONCLUSIONS.** Comprehensive physical therapy performed on an outpatient basis improves the quality of life of patients with complex pain as lumbar - sacral spine.

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