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# Chronic nonspecific (musculoskeletal) low back pain. Guidelines of the Russian Society for the Study of Pain (RSSP)

*Examination of a patient with chronic low back pain (LBP) is aimed at eliminating its specific cause and assessing the social and psychological factors of chronic pain. The diagnosis of chronic nonspecific (musculoskeletal) LBP is based on the exclusion of a specific cause of pain, discogenic radiculopathy, and lumbar stenosis. It is advisable to identify possible pain sources: pathology of intervertebral disc pathology, facet joints, and sacroiliac joint and myofascial syndrome.*

*An integrated multidisciplinary approach (a high level of evidence), including therapeutic exercises, physical activity optimization, psychological treatments (cognitive behavioral therapy), an educational program (back pain school for patients), and manual therapy, is effective in treating chronic musculoskeletal LBP. For pain relief, one may use nonsteroidal anti-inflammatory drugs in minimally effective doses and in a short cycle, muscle relaxants, and a capsaicin patch, and, if there is depressive disorder, antidepressants (a medium level of evidence). Radiofrequency denervation or therapeutic blockages with anesthetics and glucocorticoids (damage to the facet joints, sacroiliac joint), back massage, and acupuncture (a low level of evidence) may be used in some patients.*

*Therapeutic exercises and an educational program (the prevention of excessive loads and prolonged static and uncomfortable postures and the use of correct methods for lifting weights, etc.) are recommended for preventive purposes.*

***Keywords:*** *chronic nonspecific (musculoskeletal) low back pain; clinical guidelines; treatment; prevention; integrated multidisciplinary approach.*

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### 1. Relevance

Lumbar (lumbosacral) pain (LBP) is one of the most frequent reasons for visiting a physician [1–4]. According to the survey conducted in the polyclinics of Moscow, out of 1,300 patients, 24.9% sought care for LBP, while more than a half (52.9%) were concerned about LBP over the past year [5]. LBP is the leading cause of years lost to disability (YLDs) among all non-communicable diseases [6]. According to the Meridian study, which took place in 61 cities of Russia, almost every second patient comes to see a physician with pain, while in half of the cases these are patients with back pain, their number is maximal among those who are treated by neurologists and therapists [3].

The LBP is chronic in 3–10% of cases [7, 8]. Inadequate treatment and prolonged bed rest due to acute LBP, excessive exercise restriction, «painful» personality type, lowered mood, in some cases patient's interest in long-term incapacity for work, aggravation or «rental» attitude to the disease are the causes of chronic back pain [1,9].

Several national and international guidelines for the management of patients with LBP and their comparative analysis [10] have been published to date. The expert recommendations from Canada [11], Great Britain [12], Denmark [13] and the United States [14] have recently been published.

### 2. Definition, causes and risk factors

The pain which is localized between the twelfth pair of ribs and the gluteal folds is defined as LBP. Chronic back pain includes all cases when the duration of pain exceeds 12 weeks (3 months).

LBP is regarded as non-specific (musculoskeletal), unless compression of the spinal nerve root (radiculopathy), cauda equina syndrome, as well as a specific cause of pain is identified: fracture, malignancy, infection, spondyloarthritis or other diseases [15]. In ICD-10, non-specific back pain corresponds to the M.54.5 headings – low back pain (lumbodynia).

Table 1. *Danger symptoms («red flags») of the low back pain*

| Symptom | Description |
|---|---|
| Age: | Younger than 18 and older than 50 |
| Anamnesis: | Recent back injury;<br>the presence of a malignant neoplasm<br>(even in the case of radical tumor excision);<br>prolonged use of corticosteroids;<br>drug addiction, HIV infection,<br>immunosuppressive state;<br>periodically feeling sick;<br>unexplained weight loss |
| Nature and location of pain: | constant progressive pain that is not relieved at rest («non-mechanical» pain); chest pain;<br>unusual pain location: in the perineum, rectum, abdomen, vagina; association of pain with defecation, urination, sexual intercourse |
| Symptoms detected during examination: | fever, signs of intoxication;<br>structural spinal deformity;<br>neurological disorders suggesting cauda equina syndrome or damage to spinal cord roots |

Nonspecific (musculoskeletal) pain is the most common (90%) cause of the chronic LBP [16].

The most common anatomical sources of musculoskeletal pain are: lumbar discs, facet joints, sacroiliac joints, piriformis muscle, back muscles and ligaments [16, 17]. The term nonspecific (musculoskeletal) pain is justified since in many cases it is not possible to establish the exact cause of the pain, moreover, it has not been proven that an accurate determination of the pain source will improve the course and outcome of the disease [7]. Lumbar osteochondrosis is a natural process of degeneration (aging) of the spine structures, it is present in varying degrees in all people, significantly increasing with age, and is not regarded as the cause of musculoskeletal LBP.

**The risk factors** for the development of nonspecific (musculoskeletal) back pain include heavy physical labor, frequent torso bending, weight lifting, as well as a sedentary lifestyle, and whole-body vibration [18]. The risk group includes individuals whose work is associated with weight lifting or inadequate «torsion» loads of the spine (freight movers, gymnasts, tennis players, downhill skiers, metalworkers, etc.), as well as people who have to stay in static tension or sedentary position for a long time: professional drivers, office workers.

Chronicity of LBP is associated not only with damage to the discs, facet joints, the sacroiliac joint, muscles, ligaments or other structures, but also psychological and social factors («yellow flags», which include anxiety-depressive disorders, patient's misconception about pain and elaboration of real danger (catastrophizing), hypochondriac personality type, job dissatisfaction, problems in the family, decrease in activity (professional, social, household, physical), search for material compensation («rental» attitude to the disease) [1, 19, 20]. Low level of education, stress, increased anxiety, depression, low level of social support at work, exposure to whole-body vibration at work have been identified as additional risk factors for chronic LBP [18]. The longer the patient does not work due to back pain, the less likely he is to recover and return to previous work [21].

### 3. Survey

Examination of a patient with chronic LBP is aimed at finding the possible pain causes, excluding a serious (specific) disease, which occurs relatively rarely (in about 1–10% of cases) during the initial visits to a physician [7, 21, 22].

The exclusion of a specific LBP cause is based on the analysis of complaints, history of the disease, physical and neurological examination, which is aimed at identifying the danger symptoms, or «red flags» (Table 1).

If the nature, location of pain and (or) other symptoms indicate the possibility of a disease of the pelvic organs, the patient should be referred for consultation to a specialist (urologist, proctologist, gynecologist).

Physical examination is aimed at the detection of malignant neoplasms, inflammation and somatic diseases that can be manifested in pain. It includes the identifying of fever, weight loss, changes in the skin, auscultation of the lungs, palpation of the abdominal cavity and lymph nodes. Signs of herpes zoster that cause back pain can be found by examination of the skin.

During an orthopedic examination, it is advisable to assess the pathological physiological curves of the spine, the length of the legs and the position of the pelvis (the possibility of asymmetry), determine the degree of mobility in different parts of the spine, tension of the back muscles, their tenderness on palpation and the presence of painful induration.

During neurological examination identification of pareses, sensitivity disorders, changes in knee, Achilles and plantar reflexes are of primary importance. In the presence of radiculopathy signs (paresis, impaired sensitivity, reduction or loss of reflexes) and (or) the cauda equina syndrome (pelvic disorders), a neurologist consultation is advisable.

If no data indicating a specific cause of LBP in a patient with chronic LBP are found, identification of psychological and social factors or «yellow flags» is essential (Table 2).

If a patient has misconceptions regarding the disease, its prognosis, signs of «painful» behavior, an educational program and psychological counseling are recommended. Identifying a patient with severe anxiety and / or depression may justify the advisability of consulting a psychiatrist.

It is reasonable to identify the possible source of pain: lumbar discs, facet joints, sacroiliac joint, myofascial syndrome, the piriformis muscle, ligaments. For this purpose, special manual methods and diagnostic anesthetic blockades are used [23–26].

### 4. Clinical picture, course, diagnosis, and prognosis

Chronic nonspecific (musculoskeletal) LBP usually varies in intensity, is gnawing in nature, increases with movement in the lumbosacral spine, as well as in certain postures and on exertion, and is relieved by rest. Neurological examination shows no signs of radiculopathy and other neurological diseases (pareses, sensitivity disorders, loss of reflexes, pelvic disorders, etc.).

The diagnosis of chronic musculoskeletal LBP is based on patient complaints, anamnesis data and the results of somatic and neurological examinations that exclude a specific disease, discogenic radiculopathy, and lumbar spinal stenosis. Laboratory or instrumental examination methods are used to exclude specific LBP. Special manual techniques and diagnostic anesthetic blockades are used to identify possible sources of pain: the facet joints, the sacroiliac joint, the piriformis muscle; at the same time, a pronounced (by 70% or more) pain relief after the blockade demonstrates a possible pathogenetic role of the corresponding structure in the maintenance of LBP [23–26]. When identifying the specific source of pain (facet joints, sacroiliac joint, or piriformis muscle), radiofrequency denervation or therapeutic anesthetic and corticosteroid blockades are discussed.

The identification of several risk factors of the chronicity of pain in a patient (misconceptions regarding pain and «painful» behavior, problems at work and in the family, depression, stress disorder, etc.) indicates a poor prognosis and expediency of a comprehensive (multidisciplinary) examination.

### 5. Treatment

The most effective integrated (multidisciplinary) approach is aimed at reducing pain and improving the quality of life of the patient: increasing physical activity, working capacity, improving mood, and developing effective behavioral patterns to overcome pain [14, 27, 28]. It is reasonable to involve various specialists in the treatment: a neurologist, a physiotherapist (therapeutic exercise specialist, kinesiotherapist), a psychologist, an anesthesiologist, a psychiatrist, a social worker. Comprehensive treatment includes rationalization of drug therapy, therapeutic exercises, psychological methods (cognitive-behavioral therapy), an educational program («school») for back pain, spinal manipulative therapy, correction (if necessary) of the workstation and physical activity [27, 29]. Comprehensive treatment is carried out on an outpatient basis by visiting a day hospital or when a patient

Table 2. *Risk factors («yellow flags») of low back pain chronicity and long-term disability*

| Risk factors | Risk factors nature |
|---|---|
| Wrong perception of pain (catastrophizing) | False notions that «the presence of pain is extremely dangerous for the body and causes irreversible changes; a return to normal life and work will contribute to the worsening of the disease; movement and active lifestyle provoke increased pain, physical activity has a negative effect on the condition». |
| Improper behavior when having pain («avoiding», «restrictive», «painful» behavior): | Avoidance of an active lifestyle, decrease in physical activity, prolonged wearing of a fixing belt, excessive intake of painkillers |
| Problems at work or rental attitude to the disease: | job dissatisfaction, interpersonal conflicts at work, dismissal from work, desire to get benefits, benefits (up to disability) due to pain |
| Emotional disorders: | depression, anxiety, stress, avoidance of active social communication |

Table 3. *Guidelines for examination of patients with chronic back pain*

| Type of examination | Description |
|---|---|
| The purpose of somatic, neurological and manual examinations | To exclude a specific disease, discogenic radiculopathy, lumbar spinal stenosis |
| Instrumental methods of diagnosis (radiography, CT scan, MRI, etc.) | Are used to exclude (identify) the specific cause of pain, discogenic radiculopathy, lumbar spinal stenosis, establish the possible cause of nonspecific pain |
| Psychosocial factors of pain development (to determine the prognosis and medical tactics) | It is reasonable to analyze problems at work, in the family, stressful situations, intensity of pain and functional capabilities, concomitant diseases, patient's opinion about the outcome of the disease. |
| Diagnostic anesthetic blockades | Can be used to establish the possible pain cause in case of suspected facet joints damage, sacroiliac joint damage, the piriformis muscle syndrome |

is hospitalized. Essential is the focus on the return of the patient to previous work, professional, social and household activity [12].

Nonpharmacologic methods play a leading role in chronic musculoskeletal LBP treatment [11, 12, 28, 30]. In case of the discogenic LBP, the patient should be informed about the possibility of natural regression of the disc herniation [22, 31–34].

***Therapeutic exercises***

Therapeutic exercises (regular exercise, which is carried out on the recommendation and under the supervision of a specialist) are the most effective way to treat chronic back pain [9, 10, 14]. The advantage of therapeutic exercise in comparison with its absence or other methods of therapy (physiotherapy, transcutaneous electrical nerve stimulation, etc.) has been demonstrated in reducing pain and improving the functional activity of patients [7, 35, 36]. Therapeutic exercises include a large number of exercises aimed at strengthening muscles, endurance, mobility, increasing the volume and precision of movements, training of the cardiovascular system, improving overall activity [37]. There are three main groups of exercises: biomechanical, aerobic and mind-body [38]. Exercises are conducted on a regular basis, in a group or individually, lasting from 30 to 90 minutes [12]. The therapeutic efficacy of individual and group training is not significantly different [12]. Therapeutic exercises performed under the supervision of a specialist demonstrate higher therapeutic efficacy in alleviating pain and improving the quality of life than self-training of patients without a specialist's supervision. Exercise in the open air (aerobic therapeutic exercises) demonstrates some additional advantage.

However, to date there is no strong evidence of the benefits of any method of therapeutic exercises or a set of exercises; the regularity of physical exercises and exclusion of jerks and excessive movements are essential [12, 39]. Walking is a highly effective method of the treatment and prevention of chronic nonspecific LBP [40]. Regular walking in the fresh air (at least 3–4 times a week for 30 minutes) can reduce the intensity of chronic LBP and improve the functional condition, but does not replace therapeutic exercises under the guidance of a specialist and should be combined with it [41].

***Psychological treatments***

Several psychological methods are used for the treatment of chronic LBP: cognitive-behavioral therapy, mindfulness-based stress reduction, behavioral treatment [12]. *Cognitive-behavioral therapy* is the most effective psychological direction in the management of patients with chronic nonspecific LBP [42]. It is the most reasonable approach when the patient has a misconception regarding the disease and physical activity [12].

Cognitive behavioral therapy includes two main methods: cognitive and behavioral. *Cognitive therapy* includes the identification and analysis of the conception of the patient regarding pain, the possibilities of its control, and the subsequent alteration of incorrect, non-adaptive thoughts and beliefs. Cognitive therapy is aimed at reducing the level of catastrophizing of pain. In many cases, it is important to explain to the patient that pain intensification is a normal reaction to increased physical activity, which will not cause the disease progression but will contribute to muscle training and further pain reduction. It is reasonable to clarify that a gradual increase in physical activity is very beneficial and will not lead to additional damage. *Behavioral treatment* is aimed at changing the «avoidant, restrictive» behavior and «painful» lifestyle, at treating kinesiophobia, increasing physical and social activity. The participation of family members and relatives in the treatment process is of great importance for achieving therapeutic success.

***Mindfulness-based stress reduction*** is a type of cognitive-behavioral therapy of the «third generation» (or the «third wave») and is used to treat chronic LBP [14]. This method emphasizes the important connection between the disturbing thoughts, emotions, and feelings in the body. Through the practice of mindfulness, the patient learns to «focus» attention on the current moment, enjoying what is happening here and now, without distractions to disturbing thoughts.

***Behavioral treatment*** aims at muscle relaxation; this type of treatment includes progressive muscle relaxation, electromyographic biofeedback [43].

Psychological methods of treatment should be carried out by a qualified specialist who first ascertains what the patient's conception about the causes and mechanisms of back pain is and tries to figure out the basis on which these ideas were formed (the results of surveys, physicians' statements, words of relatives and friends, information from the Internet, etc.). It is important to assess the emotional state of the patient, the relationship between the development or worsening of the symptoms and stressful situations, possible rental mindset and other social causes. The patient is gradually being explained the probable causes of back pain in his/her case (damage to the discs, joints, muscles, and ligaments). To increase the satisfaction of the patient with treatment, the physician should, together with the patient, identify specific therapeutic goals: reducing pain, increasing physical

Table 4. *Key recommendations for the treatment of patients with chronic non-specific back pain*

| Recommendations | Content |
|---|---|
| Comprehensive (multidisciplinary) treatment | Therapeutic exercises, psychological methods (cognitive-behavioral therapy, including the mindfulness-based stress reduction), spinal manipulative therapy, educational program |
| Drug therapy (during multidisciplinary exposure) | NSAIDs, skeletal muscle relaxants, for mixed anxiety-depressive disorder – antidepressants |
| Possible treatments (low level of evidence) | Radiofrequency denervation or anesthetic and corticosteroid blockades of the facet joints, the sacroiliac joint |
| Additional treatment (low level of evidence) | Back muscle massage, acupuncture; botulinum toxin injections |

household and social activity, preserving the job, improving the physical and psychological quality of life, etc. They point out the expediency of changing the physiological response systems by reducing muscle tension, explain the connection between muscle tension and pain syndrome, and show techniques to relax the affected muscles.

***Educational program***

The educational program («school») is a reasonable part of multidisciplinary treatment [9, 10]. It is conducted by physicians or healthcare professionals and physiotherapists for a group of patients and includes information (training) on the causes of back pain, its treatment and prevention, and physical activity.

***Spinal manipulative therapy***

Spinal manipulative therapy is most effective in treatment of the chronic musculoskeletal LBP in a complex therapy with therapeutic exercises and psychological methods [44].

Meta-analysis showed the advantage of spinal manipulative therapy over sham spinal manipulative therapy in terms of reducing the intensity of pain and improving the functional activity of patients [45]. The advantage of spinal manipulative therapy over other common «ineffective» treatment methods (massage, physiotherapy, etc.) has been established.

Cochrane review of the effectiveness of spinal manipulative therapy (which included 26 randomized controlled trials [RCTs]) showed that spinal manipulative therapy provides insignificant pain relief and improvement of the functional state for those having chronic nonspecific LBP [46]. However, no evidence has been obtained that spinal manipulative therapy improves the quality of life of patients, contributes to renewing professional activity.

The prescription of spinal manipulative therapy should be approached individually, given that many patients who previously received this type of therapy, associated it with the improvement of their condition. In patients with a positive attitude to spinal manipulative therapy, its inclusion into the combination treatment may lead to a significant positive effect.

***Acupuncture***

*Acupuncture* can be used (low level of evidence) in the combination treatment of chronic nonspecific back pain [9].

There is no standard method of conducting acupuncture when having LBP, which makes it difficult to assess its effectiveness. According to one system analysis, the effectiveness of acupuncture (pain reduction, improvement of the functional) in comparison with sham acupuncture has not been proven [47]. According to another system analysis, acupuncture reduces pain and slightly improves the functional condition [48].

In patients with positive experience in acupuncture, its inclusion in a multidisciplinary therapy can lead to a positive effect.

*Back muscle massage* is a possible method of treatment for chronic musculoskeletal LBP (in addition to complex therapy) with minimal efficacy (low level of evidence). Massage leads to a short-term pain reduction and an improvement in the functional condition but does not affect the long-term results in terms of both pain and functional condition [49]. In patients with a positive attitude to massage, its inclusion in a multidisciplinary therapy can lead to a positive effect.

***Other non pharmacological therapies***

*Traction, various physiotherapy treatment, wearing special belts and corsets, orthopedic insoles and shoes* are not recommended since they do not have convincing evidence of effectiveness in the management of chronic musculoskeletal LBP, which is noted in all expert recommendations [10, 12, 13, 48].

*Percutaneous electrical stimulation of the nerve* is not recommended because it does not have convincing evidence of efficacy in the management of chronic musculoskeletal LBP, as noted in the expert recommendations [12, 14].

***Drug therapy***

*Non-steroidal anti-inflammatory drugs (NSAIDs)* are recommended (medium level of evidence) when having chronic musculoskeletal LBP during the period of complex therapy [7, 35, 50]. The effectiveness of NSAIDs in comparison with placebo has been proven, but the long-term results (over 3 months) of their use have been less studied [50].

The use of naproxen [51], etoricoxib [52], valdecoxib [53] and rofecoxib [54] for chronic nonspecific LBP was studied in comparison with placebo. The effectiveness of various NSAIDs in reducing pain, increasing functional activity, improving the physical quality of life is proven; the advantage of any particular NSAID over others [12, 55] has not been established.

Selective cyclooxygenase inhibitors (COX-2) are safer in relation to lesions of the gastrointestinal tract (GI tract) [56]. Predominantly, selective NSAIDs are meloxicam and nimesulide, highly selective – celecoxib, etoricoxib (coxibs). The administration of selective COX-2 inhibitors, coxibs, is more proven if there is a high risk of gastrointestinal side effects. Proton pump inhibitors are the drugs of choice when there is a risk of gastrointestinal complications while taking NSAIDs.

The use of NSAIDs in chronic nonspecific back pain should be as short as possible in the minimum effective doses; when selecting a particular NSAID, the risk of possible side effects should be taken into consideration [50].

*Skeletal muscle relaxants* are recommended (medium level of evidence) in chronic musculoskeletal LBP during multidisciplinary therapy [9, 10]. The drugs of this group include tizanidine, baclofen, diazepam, tolperisone.

Several placebo-controlled studies have shown the therapeutic efficacy of various skeletal muscle relaxants in relieving pain, but monotherapy with skeletal muscle relaxants does not lead to a significant reduction in psychological distress and improvement in the quality of life [12]. Possible side effects (drowsiness, sedation, addiction) when using benzodiazepines should be considered [9].

*Antidepressants* can be used in combination treatment of patients in case of a depressive disorder (low level of evidence). The recommendations of experts from different countries (Austria, Finland, France, Norway, USA) note the advisability of using antidepressants, especially in patients with signs of mild or severe depressive disorder [10].

According to one system analysis, the use of tricyclic antidepressants and selective serotonin and noradrenaline reuptake inhibitors reduces the intensity of chronic LBP [57], according to another – no significant reduction in pain, improvement in functional condition, reduction of depression symptoms while taking antidepressants was shown [50]. In the latest recommendations of experts from the UK, antidepressants are not recommended [12], experts from the United States recommend only duloxetine [12].

*Weak opioids* (tramadol, etc.) are not recommended due to possible development of addiction [50].

*The capsaicin patch* can be used to alleviate chronic nonspecific back pain. Like other drugs, capsaicin is advisable to use in a short course during the period of non-drug therapy. About one third of patients experience local allergic reactions (severe burning, reddening of the skin, itching), which can lead to treatment discontinuation.

*Botulinum toxin injections* can be used in chronic myofascial pain (low level of evidence) and are not recommended in other causes of LBP. The effectiveness of botulinum toxin in chronic myofascial pain was noted according to the results of the Cochrane review [58].

*Antiepileptic drugs (gabapentin, pregabalin, etc.)* are not recommended in chronic nonspecific LBP due to the lack of evidence of their effectiveness [59].

***Minimally invasive approaches***

*High-frequency denervation (radiofrequency ablation)* can be used (low level of evidence) in the cases when the source of LBP (facet joints, sacroiliac joint) is identified after the diagnostic anesthetic «blockade». It is most effective when pain decreases significantly (by 70% or more) during the anesthetic blockade [60]. High-frequency denervation is regarded as one of the possible methods of therapy in those cases where there is significant (5 points or more on VAS) local pain, and a positive effect of nerve blockade is noted [12].

In case of the sacroiliac joint damage, the denervation of the lower lumbar dorsal and lateral branches 1 to 3 of the sacral roots provides a positive effect for up to 1 year [26, 61].

*The introduction of drugs (anesthetic and corticosteroid blockades)* in the facet joints, the sacroiliac joint can be used (low level of evidence) in complex therapy, when the source of LBP (facet joints, sacroiliac joint) is identified after the anesthetic blockades. The effectiveness of blockades in reducing pain and improving functional status was noted in a systematic review [62]. The advantages of blockades under x-ray control [63] and periarticular injections over intraarticular ones [64] have been shown.

*Intradiscal injection of drugs* is not recommended even when LBP is discogenic. There is no convincing evidence of the effectiveness of such treatment [30].

***Surgery***

Surgical treatment (removal of a herniated disc) is recommended in the case of a discogenic LBP if conservative therapies show no effect (low level of evidence). It is most proven in the case of intense pain, which is poorly amenable to drug therapy, as well as in the presence of degenerative changes (disc herniation) at no more than two levels [7, 9].

However, according to several system analyses and meta-analyses, surgical treatment is not effective in discogenic low back pain (without signs of radiculopathy) [65–67]. It is not recommended by European experts [68].

***Multidisciplinary biopsychosocial treatment programs***

Multidisciplinary programs, which include physical therapy (therapeutic exercises), psychological methods (primarily cognitive-behavioral therapy), and educational conversations / lectures (schools) for patients are recommended for the treatment of chronic LBP. Multidisciplinary programs may differ in combinations of the listed methods, in including three or two types of treatment: physical, psychological methods and educational module [69–79], physical and psychological methods [80–89], physical methods and educational module [90–92]. Physical therapy (various therapeutic exercises, more often – group exercises) is necessarily included in all multidisciplinary treatment programs for patients with chronic LBP. After the completion of the treatment program, it is advisable to supervise the patient for 6 months (repeated face-to-face contacts, a telephone survey). The use of multidisciplinary programs allows to improve the main indicators of the patient's condition: intensity of pain, functional activity, professional activity, psychological and physical quality of life.

## Prevention

For the prevention of re-exacerbations the following is of great importance: 1) avoidance of over-exercising (weight lifting, carrying a heavy bag in one hand, etc.) and hypothermia; 2) elimination of prolonged static loads (prolonged standing or sitting in static and awkward positions, etc.); 3) regular therapeutic exercises, swimming, walking, etc. [93].

In general, the educational program (prevention of excessive exertion, prolonged stay in static and uncomfortable postures, correct methods of lifting weights, etc.) and therapeutic exercises are effective. All other methods, such as wearing a protective belt or taking chondroprotectors or other drugs, have not been proven to be effective in preventing back pain.

The introduction of these recommendations into clinical practice can significantly improve the condition of many patients and reduce the economic burden associated with disability due to chronic musculoskeletal LBP.

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