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**FUNCTIONAL RECOVERY THROUGH KINETIC MEANS OF OPERATED LUMBAR
DISC HERNIATION**

SUMMARY THESIS

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INTRODUCTION

The thesis with the name: Functional recovery by kinetic means of operated lumbar disc herniation, is made up of 14 chapters and contains the theoretical foundation of the work and 2 practical research studies.

The first part - *the theoretical foundation* of the theme will describe informative elements regarding the pathology of operated lumbar disc herniation as well as its impact on the bio-psycho-social balance of the individual. It contains up-to-date information on lumbar disc herniation surgery, resulting from the critical review of specialists. The condition is described from several points of view: anatomical, physiopathological, symptomatic and therapeutic. The theoretical conclusions consisted in extracting information from the specialized literature both at national and international level.

The aim of the work is somato-functional medical rehabilitation with the role of preventing a locomotor disability that occurred as a response to a lumbar disc herniation in the case of a surgical intervention. Therefore, a set of techniques and methods based on physical exercise is used, in order to obtain a favorable recovery response in the shortest possible time (Blauwet, C., et al., 2012). The action of the morpho-functional factors cooperates in performing physical exercises and is due to biomotor qualities (Nemeş, D., et.al., 2006).

In a systematic literature review, physical exercise was observed to have a beneficial role in several parameters of quality of life (Goga, I. B., 2020). Psychic function and its impact on the individual, is highlighted in more and more writings in recent years (Stănescu, M., et al., 2014). The final goal will be to adapt the treatment from a multidisciplinary perspective.

Continued lumbar pain syndrome with operated lumbar disc herniation, is a musculoskeletal affliction that affects the vast majority of the population, being predominantly in people of the second age.

The worldwide recognition of the importance of medical recovery is the result of its beneficial effects. Consequently, it is necessary to develop new models for testing and evaluating subjects with the aim of limiting pain and the frequency of pathology.

CONCLUSIONS OF THE THEORETICAL FOUNDATION

- The annual incidence of lumbar discopathy is 5-45%;
- Almost 33.2% of the subjects with back pain complain of symptoms for a period of less than a month, 33% feel the pain between 1-5 months and 32.7% of the subjects, more than 6 months;
- The most common cause of lumbar pain is disc herniation, affecting approximately 1/3 of the population over 20 years old;
- In approximately 3% of cases, root involvement is observed, which requires the application of surgical treatment;
- Acute re-herniation is best addressed by early revision discectomy, before epidural fibrosis forms and matures;
- By knowing the postoperative behavior, the risk factors and avoiding the activities that led to the installation of the pathology, we can prevent a possible re-hernia;
- Secondary kinetoprophylaxis can prevent a possible surgical reintervention, as happens in 44% of cases in the first two years and 69% in the first 5 years;
- The success rate of lumbar disc surgery appears to be 92-98% and a re-operation rate of 11.8% has been found;
- Prolonged bed rest can be an aggravating factor for disability

The second part included two studies.

- The first study will contain a treatment protocol in which I will include physical exercises adapted to the pathology that will be based on the Williams treatment method and another treatment protocol to which I will add physical exercises using mechanized therapy.
- The second study will contain the treatment protocol carried out with mechanized therapy and a treatment protocol to which will be added physical exercises adapted to the pathology, using a new treatment method such as the Feldenkrais method. I will also add a new method of testing the results, namely the Tomayer test.

The pathology is viewed from the 3 perspectives: bio-functional, psycho-emotional and socio-professional.

In order to be able to create an appropriate therapeutic protocol, I consulted old, current and innovative informational materials. The techniques used were the result of these documentation efforts.

The treatment protocol aimed at somato-functional medical rehabilitation.

STUDY I - THE INFLUENCE OF THE BIO-PSYCHO-SOCIAL BALANCE THROUGH PHYSICAL EXERCISE AND ITS IMPACT ON THE RECOVERY OF WORKING CAPACITY IN SUBJECTS WITH LUMBAR DISC HERNIATION OPERATED

Premises of the study I

Since the incidence of post-surgical lumbar disc herniation cases has an increasing trend, it is necessary to intervene with new methods that could contribute positively and in the long term to medical rehabilitation. Highlighting the impact of this pathology on the bio-psycho-social balance, leads us to prioritize this pathology in the sense of the rapid identification of treatment methods. Starting from the consideration that technology is in continuous evolution, an adaptation of the current treatment protocols is required, by using mechanized equipment. Finding new solutions for the diagnosis, evaluation and treatment of lumbar disc herniation could contribute to increasing the quality of medical services and at the same time to the efficiency of medical treatment.

The hypotheses of the study I

The evaluation of the patient with operated lumbar disc herniation, according to the bio-psycho-social model, can ensure the development of a specific medical recovery protocol that:

ensures functional independence

reduces the bio-psycho-social impact caused by pain, in patients with operated lumbar disc herniation

The purpose of the study I

This research aims to improve the evaluation and re-evaluation system of patients with operated lumbar disc herniation, to adopt innovative treatment measures and to approach the pathology from the point of view of the bio-psycho-social model.

The intended effect is to raise the standard of medical rehabilitation by using assessment tools and adopting standardized outcome measures for rehabilitation interventions. (World Report on Disability, 2011). The final result will be found in the possibility of inserting the subjects into everyday life.

Study objectives I

Increasing the quality of medical care regarding medical rehabilitation for patients with operated lumbar disc herniation;

Emphasizing the importance of secondary kinetoprophylaxis in the case of this pathology;

Decreased complication rate in patients who have undergone laminectomy or lumbar discectomy;

Increasing functional independence and quality of life;

Decreased disability rate in post-laminectomy or lumbar discectomy patients.

The purpose of the study I

In order to carry out study I, we set ourselves the following tasks: documentation of specialized scientific materials, in order to inform; establishing general and individual objectives; strengthening the inclusion and exclusion criteria of the subjects; formulation of research hypotheses; establishing research methods; establishing evaluation methods; establishing a physiotherapeutic recovery protocol; constituting the group of subjects that will be included in the study based on a given consent, regarding the content of the study; testing subjects before and after treatment; application of the recovery protocol; evaluation of the effects of the applied treatment; analyzing and interpreting the results regarding the involvement of the pathology on the bio-psycho-social balance.

Research methods included in study I

In the proposed study, I propose to include the following research methods:

Method of scientific documentation; observation method; investigation method; statistical-mathematical method; case study method; the experimental method; method of graphic representation.

Period, place and subjects of study I

Period: July 2021 – March 2022

The study will be carried out on a sample of 16 subjects, over a period of 10 days (5 days of treatment, 2 days break and then another 5 days of treatment), 3 hours/day each.

They will be hospitalized in the National Institute of Medical Expertise and Recovery of Work Capacity to follow the treatment protocol adapted to the pathology of lumbar disc herniation after surgical intervention, carried out in the traditional way.

The 16 subjects were divided into 2 study groups, of which:

The control group consists of 8 subjects and performs a classic kinetic program based on the Williams method

The experimental group also consists of 8 subjects and will perform the classic kinetic program using the Williams method, to which mechanized therapy is added.

To maintain the same level of effort, the control group will perform the physical exercises with increased load and with a higher number of repetitions.

Evaluation:

Bio-functional assessment :VAS scale and biometric tests

The psycho-emotional evaluation: PHQ-9 questionnaire

Socio-professional evaluation: Roland-Morris questionnaire and FABQ questionnaire

CONCLUSIONS OF THE STUDY I

After obtaining the average of the values between the initial testing and the final intragroup and extragroup testing, the result was analyzed and interpreted from a statistical point of view. The analysis aimed to include bio-functional, psycho-emotional and socio-professional factors, in order to achieve bio-psycho-emotional balance. Following the analysis, we concluded that:

Bio-functional assessment has an important influence in the rehabilitation process.

The pain had a downward trajectory, the pain syndrome emerged towards remission, following the administration of the treatment protocol. Subject 1 in the experimental group, although performing well on the other assessments, states a steady evolution in terms of pain relief. By using the survey method, we observed a problematic situation in the family environment, which leads to a lack of involvement in order to reinsert into daily activities. Joint mobility was increasing, with a greater weight in the case of the experimental group, which highlights the effect of mechanized therapy.

The psycho-emotional evaluation has a favorable evolution but in a relatively small percentage. Analyzing all 9 indicators, it is observed that the experimental group recorded the greatest improvement regarding the indicator related to the decrease of interest or pleasure in current activities. The control group showed the greatest improvement on the indicator related to sadness, demoralization or hopelessness.

Both study groups showed favorable evolution but higher in the experimental group.

Socio-professional evaluation

Through the Roland-Morris test, were decreasing, which is aimed at a desire to resume daily activities. There is a relatively symmetrical evolution, but a greater improvement occurs in subjects in the experimental group.

Regarding the testing of the subjects in terms of beliefs related to the occurrence of pain during daily activities, the evolution is positive for both study groups. The greater decrease of the values in the case of the experimental group helps us to conclude that the scale of the belief of the occurrence of pain in daily activities is in remission.

STUDY II – FUNCTIONAL RECOVERY OF OPERATED LUMBAR DISC HERNIATION

The premises of the study II

The recognition, worldwide, of the importance of medical recovery, requires the development of new models of testing, evaluation and treatment of subjects at different ages.

Since it is well known that, although this pathology is extremely common in daily practice, attention to postoperative conduct is limited. Its effect over time follows the rapid degeneration of the musculoskeletal system. That is why for a favorable result in a shorter time, we believe that there is a need to implement new measures in the existing physiotherapeutic protocol.

Given that, regardless of the type of pathology, the final objective of medical rehabilitation is the quality of the subject's recovery in conditions of functional independence, there will always be a need to refresh the level of theoretical knowledge and practical skills. The subsequent application of new clinical, functional and treatment evaluation methods will result in a faster healing process.

Study hypotheses II

hypothesis 1: A complex recovery protocol ensures efficient functional recovery

hypothesis 2: Completing the physiotherapeutic treatment with a method of medical gymnastics in the case of patients with operated lumbar disc herniation, determines a rapid favorable response.

The purpose of the study II

The purpose of this study is the development of a complex physiotherapeutic protocol, which allows the synthesis of evaluation and treatment means in schemes with indicative value.

The final goal is the reinsertion of the subject into daily life and the acceptance of the new individual condition, post-surgical intervention.

Study objectives II

Improving treatment protocols for patients with operated lumbar disc herniation;

Approaching new treatment methods to enhance the healing process;

Emphasizing the importance of complying with secondary kinetoprophylaxis;

Increasing functional independence and quality of life for patients with post-laminectomy or lumbar discectomy intervention;

Resumption of daily activities and reintegration into socio-professional life;

Decreased disability rate in post-laminectomy or lumbar discectomy patients.

The purpose of the study II

In order to carry out study I, we set ourselves the following tasks: documentation of specialized scientific materials, in order to inform; establishing general and individual objectives; strengthening the inclusion and exclusion criteria of the subjects; formulation of research hypotheses; establishing research methods; establishing evaluation methods; establishing a physiotherapeutic recovery protocol; constituting the group of subjects that will be included in the study based on a given consent, regarding the content of the study; testing subjects before and after treatment; application of the recovery protocol; evaluation of the effects of the applied treatment; analyzing and interpreting the results regarding the involvement of the pathology on the bio-psycho-social balance.

Research methods included in study II

In the proposed study, I propose to include the following research methods:

Method of scientific documentation; observation method; investigation method; statistical-mathematical method; case study method; the experimental method; method of graphic representation.

Period, place and subjects of the study II

Period September 2022 – February 2023

The study will be carried out on a sample of 30 subjects, over a period of 10 days (5 days of treatment, 2 days break and then another 5 days of treatment), 3 hours/day each.

They will be hospitalized in the National Institute of Medical Expertise and Recovery of Work Capacity to follow the treatment protocol adapted to the pathology of lumbar disc herniation after surgical intervention, carried out in the traditional way.

The 30 subjects were divided into 2 study groups, of which:

The control group - consists of 15 subjects and performs a classical kinetic program based on the Williams method + mechanized therapy

The experimental group - consists of 15 subjects who will perform a classical kinetic program using the Williams method + mechanized therapy, to which is added a treatment method, the Feldenkrais method.

To maintain the same level of effort, the control group will perform the physical exercises with increased load and with a higher number of repetitions

Evaluation:

Bio-functional assessment :VAS scale and biometric tests

The psycho-emotional evaluation: PHQ-9 questionnaire

Socio-professional evaluation: Roland-Morris questionnaire and FABQ questionnaire

CONCLUSIONS STUDY II

After obtaining the average of the values between the initial testing and the final intragroup and extragroup testing, the result was analyzed and interpreted from a statistical point of view. The analysis aimed to include bio-functional, psycho-emotional and socio-professional factors, in order to achieve bio-psycho-emotional balance.

Following the analysis, we concluded that:

Bio-functional assessment has the greatest influence on the rehabilitation process.

The pain had a downward trajectory, so we have a favorable-increasing evolution. A greater decrease exists in the case of the experimental group as compared to the control group.

We have an obvious increase in the range of motion in both study groups. An involution is recorded in the case of subjects 2 and 4 in the control group, in the lumbar Schober test. On average, the increase in joint mobility was greater in the experimental group.

The psycho-emotional evaluation - has a favorable evolution but in a relatively low percentage.

The analysis of score differences shows that all patients register a considerable decrease in the intensity of depression. And in the case of the control group, each patient recorded a decrease, but less significant, remaining in the area of moderate depression.

Analyzing the indicators, a considerable improvement in mood is observed, thus at the final testing there are 26.7% more patients who have never experienced in the last 2 weeks a decrease in interest or pleasure in current activities, with 13.3% more who did not feel sad at all, 26.7% more who no longer had sleep disturbances, 40% more who did not feel tired, 13% more who did not feel changes in appetite , 13.3 more who felt better about themselves, 20% more patients had no problems concentrating, 27% more no longer felt sluggish or restless and a fact very importantly, 86.7% of patients no longer thought they would be better off dying or harming themselves, compared to 73% at the start of treatment.

Socio-professional evaluation

Regarding the Roland-Morris test of the subjects, we observe a medium-high evolution on the rehabilitation process. The decrease in the values helps us to understand that the subjects in the experimental group achieved a greater improvement in recovery compared to the control group.

Thus, we conclude that the Feldenkrais rehabilitation method had a substantial contribution in this case.

Regarding the testing of the subjects with the FABQ test, by comparing the subscale for assessing the beliefs of avoiding professional activities and the subscale for assessing the beliefs of avoiding physical effort, determined by the fear of triggering pain, we observe a higher weight of interest in avoiding physical effort in favor of the experimental group.

GENERAL CONCLUSIONS

- The caseload of operated lumbar disc herniation is constantly increasing;
- Socio-professional reinsertion contributes to a global economic deficit;
- The effect of the pathology is reflected in the decrease in the quality of life;
- Functional medical recovery depends on the time and way of therapeutic approach;
- The application of new assessment and treatment means contributes to effective medical rehabilitation;
- Investing in specialized equipment shortens recovery time;
- Bio-psycho-social balance is the key to medical rehabilitation;

This paper approaches lumbar disc herniation from multifactorial perspectives. The identification of the subsequent effects and the incapacities produced by the pathology on the individual, determines that this condition should be treated primarily, especially because of the impact from a bio-psycho-social point of view.

ELEMENTS OF ORIGINALITY

The elements of originality included in this work refer to the functional recovery of subjects with operated lumbar disc herniation. In the two present studies, comparisons were made between 2 medical rehabilitation protocols based on adapted physical exercise.

The first protocol highlighted the importance of introducing mechanized therapy in medical recovery and its effect in the pathology of operated lumbar disc herniation.

The statistical result helps us to understand that mechanized therapy has a consistently positive influence in obtaining a beneficial recovery result, in a shorter time. If these results come in support of medical rehabilitation, we admit that we can make a recommendation to centers specialized in medical rehabilitation, to emphasize the importance of investment in mechanized equipment and implicitly, in health.

The second recovery protocol is based on the previous treatment protocol, in which mechanized therapy was introduced and complemented with a rehabilitation method based on physical exercise, namely, the Feldenkrais method. This emphasizes posture awareness.

Also, the second protocol highlighted the fact that, for faster quantification of the results, one more evaluation method like the Tomayer method is needed.

All this information can be adopted in lumbar disc herniation surgery for the functional and effective recovery of the individual.

Lumbar herniated disc surgery has been extensively studied over time, but I believe we can add new elements to evaluation and treatment. An important aspect pursued in this paper is the effect of the condition on the quality of life and which was pursued, through visible results, from a psycho-emotional point of view. The conclusions of the studies lead us to remember that a pathology does not only mean physical pain. Suffering that occurs after the installation of the pathology can have bio-functional, psycho-emotional or socio-professional effects.

Therefore, approaching the pathology from the perspective of the bio-psycho-social model, can contribute to a more effective and comprehensive evaluation. At the same time, it can help us understand installed deficiencies.

Another element of originality considered in this work is the impact of pathology in the social-economic environment. In the specialized literature, there are limited studies in which it is exclusively aimed at operated lumbar disc herniation with reference to the recovery of work capacity. In this sense, this work proposes an extrapolation of treatment protocols and assessment methods to support the reinsertion of individuals in the socio-professional field.

It is extremely important to identify the effects of lumbar disc herniation after surgery. Only by being aware of the effects and applying the appropriate treatment protocols, we can prevent the installation of possible disabilities.

"Vocational re-education or partial resumption of work should be considered as soon as possible after surgery" (Donceel, P., et al. (1998).

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