LUMEN ET VIRTUS
ISSN: 2177-2789

PERFORMANCE OF PHYSICAL THERAPY IN THE POSTOPERATIVE PERIOD OF HERNIATED DISCS: A LITERATURE REVIEW

https://doi.org/10.56238/levv11n29-001

Submitted on: 09/20/2020 **Publication date:** 10/20/2020

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ABSTRACT

Lumbar disc herniation is an extremely common disease that occurs with high prevalence today, affecting 5.4 million Brazilians. It is recognized that 30 to 40% of the adult population of the world has asymptomatic lumbar disc herniation and 80% of this same population has or will have low back pain. The objective is to verify the physiotherapeutic treatments in the postoperative period of lumbar disc herniation in adults of both sexes. The search for the articles involved in this work will begin in August 2019 and end in July 2020, and will be carried out in three bibliographic databases: PubMed, SciELO, PEDro. Conducting research in the aforementioned databases using the following key terms: "Postoperative", "physiotherapy", "AND", "lumbar disc herniation", "postoperative rehabilitation", "OR", "physiotherapy", "AND", "lumbar disc herniation", "postoperative", "AND", "herniated disc", "AND", "physiotherapy", "physiotherapy", "in", "postoperative" of "herniated disc", "physiotherapy", "AND", "lumbar disc herniation", "AND", "postoperative". All the articles found will be read in full and it should be noted that all those calculated by the PEDro scale will remain. We found 20 articles, from which 10 relevant studies were used that answered the questions constructed by the authors, with different physical therapy treatments aimed at a recovery with more assertive results. The studies analyzed report that early physical therapy is extremely important for the postoperative period of lumbar disc herniation, containing several benefits for the health of patients who underwent this surgical intervention.

Keywords: Postoperative Physiotherapy. Lumbar disc herniation. Postoperative rehabilitation.

INTRODUCTION

Lumbar disc herniation is an extremely common disease that currently occurs with high prevalence, affecting 5.4 million Brazilians according to IBGE (2018). It is recognized that 30 to 40% of the world's adult population has asymptomatic lumbar disc herniation and 80% of this same population has or will have low back pain (WETLER; JUNIOR; BARROS, 2004) Disc herniation arises through an injury that occurs in the intervertebral discs located in the spine, due to a rupture of the fibrous ring, sequencing a displacement of the central mass of the discs in the intervertebral spaces, with the involvement of the nerve roots, based on a chronic and degenerative disease of the spine (NEGRELLI, 2001).

Siqueira (2014) states that its cause is classified as multifactorial, due to the adoption of poor posture, sustained excess weight and muscle imbalance attributed to fatigue of the lumbar stabilizers. And it can result in pain and neurological deficits due to mechanical compression or the inflammatory process generated (VIALLE et al., 2010).

Individuals who have this disease, in most cases, are prevented from performing their daily activities and the execution of their paid activities, and taken to disability retirement, due to the sequelae it causes (JOHNSTON; PAGLIOLI; PAGLIOLI, 2006).

Herniated discs can be classified into three genera, namely: cervical disc herniation, thoracic disc herniation, and lumbar disc herniation. Cervical disc herniation for Marques (1994) has pain of cervical origin, but can radiate to the shoulders, arms, hands and head, resulting from irritation of the nerve roots of the intervertebral foramen. This occurs due to the extravasation of the vascular bed during its course in the spinal canal, and may also be due to the reduction of space or erroneous movement of the neck, causing this mechanism to cause pain, paresthesias and disabilities in the cervical region. The complications of this type of hernia include headaches, strength restriction and loss of sensitivity.

Regarding thoracic disc herniation, its identification is still done with little assiduity. There is a difficulty in diagnosing thoracic disc herniation, due to its recurrent signs and symptoms, reduced muscle strength of the lower limbs, characteristic pain in the dorsal region, hyperreflexia, urinary and intestinal disorders, and even paraplegia. The diagnosis includes intradural tumors, neurological diseases and diseases of the thoracic and abdominal viscera (FILHO et al., 1993). Cecin (2008) argues that lumbar disc herniation consists of a displacement of the nucleus pulposus with a fragment of the fibrous ring outside its functional boundary.

Regarding the location, disc herniation can appear in such regions: median, which is usually manifested by acute pain in the lumbar region, possibly with irradiation. Lateral center, which in turn can compromise the transient nerve root or the emergent nerve root.

Foraminal, which compromises the emerging nerve root. Lateral extreme, which compromises the superior nerve root, since the path of the lumbar nerve roots is transverse. According to Hennemann (1994), it is of great importance to correlate the imaging findings with the clinical data, for a correct location of the herniated disc.

Among the treatments, there is medical intervention, which, according to Ernst and Fialka (1993), presents the drug action of analgesics, anti-inflammatories and muscle relaxants are necessary because they relieve pain, thus preventing the patient from evolving to the chronic phase. It is also used to keep the patient at rest. Surgical intervention for herniated discs is also presented, and is indicated in cases with acute severe neurological deficit (4 to 12 weeks) or successive motor weakness, bladder and intestinal disorders, and disabling radicular pain without progression to conservative treatment (MILANIet al., 2009). And finally, the physiotherapeutic intervention, which is performed early in the postoperative period, is an adjuvant with excellent results. (JOHNSTON; PAGLIOLI; PAGLIOLI, 2006).

Conservative treatment is effective in 80% of patients, within four to six weeks (VIALLE et al., 2010). Post-surgical physical therapy treatment is used with the main purpose of improving the patient's functional and reducing pain. Neural stretching, muscle stretching, muscle strengthening and the use of electrothermophototherapy can be performed to reduce pain and stimulate muscle (JOHNSTON; PAGLIOLI; PAGLIOLI, 2006).

In Carvalho's (2012) argument, the importance of early and intensive rehabilitation after lumbar disc herniation surgery is highlighted, highlighting the positive effect on pain, disability and especially spinal mobility.

With this study, we will identify and cite the best physical therapy treatments in the postoperative period of lumbar disc herniation, in addition to verifying and collating those that did not have benevolent results. Studies denote that if physical therapy is included in the postoperative period in a previous and accentuated way, the results and evolution of the patients will appear in a satisfactory and hurried way.

Our purpose is to demystify whether there is really a significant improvement with physiotherapeutic treatments of these newly operated citizens, what mechanisms are performed, what methods, devices and techniques are used. Highlight what may or may not bring risks to these patients who will be vulnerable since they have undergone a surgical procedure.

BACKGROUND

Our purpose is to highlight the importance of including the physiotherapy professional in the postoperative period of lumbar disc herniation. Patients undergoing surgery for herniated discs may become debilitated and limited due to the sequelae it causes. Since the main role in physical therapy rehabilitation is not only to increase the pain threshold, physical therapy proposes the functional improvement of these patients, highlighting positive effects on pain (JOHNSTON; PAGLIOLI; PAGLIOLI, 2006).

This work was conceived because I felt the need to provide physical therapy students and physical therapists with broad knowledge about postoperative rehabilitation of lumbar disc herniation, so that we can contribute with new and prudent methods of interventions, conducts and physical therapy treatments.

OBJECTIVE

GENERAL OBJECTIVE

To check the physiotherapeutic treatments in the postoperative period of lumbar disc herniation in adults of both sexes.

SPECIFIC OBJECTIVE

To highlight the effect of postoperative physical therapy treatment of lumbar disc herniation in adults of both sexes.

METHOD

The present study was based on a literature review with a qualitative approach, regarding physical therapy treatment in the postoperative period of lumbar disc herniation.

The search for the articles involved in this work began in August 2019 and ended in July 2020, and was carried out in three bibliographic databases: PubMed, SciELO, PEDro.

To achieve the results of the search of the articles, the following descriptors were used, such as: "Postoperative", "physiotherapy", "AND", "lumbar disc herniation", "postoperative rehabilitation", "OR", "physiotherapy", "AND", "lumbar disc herniation", "postoperative", "AND", "herniated disc", "AND", "physiotherapy", "physiotherapy", "in", "postoperative" of "herniated disc", "physiotherapy", "AND", "lumbar disc herniation", "AND", "postoperative".

Articles from patients in the postoperative period of lumbar disc herniation, adults, both sexes, published in any year and all related to post-surgical physical therapy treatments were included.

Articles that are not directly related to physical therapy, that contain in the title study carried out on animals and that include physical therapy treatments associated with other diseases were excluded.

Finally, all the articles found were read in full and it should be noted that all those were calculated using the PEDro scale will remain.

RESULTS

Through bibliographic research, 20 scientific articles were collected on the performance of physiotherapy in the postoperative period of herniated discs, generated between the years 2001 and 2015. However, after selection by inclusion and exclusion criteria, only 10 articles were considered. These were compared and there is a common consensus among scientific studies on the subject, pointing out aspects of greater relevance described by the authors.

The scientific studies analyzed were condensed in the table below:

Chart 1 – Analysis of Scientific Texts. Belo Horizonte - Minas Gerais.

Author(s)	Year	Goal	Methods / Instruments	Main results	Conclusion
Megan Snowdon and Casey L. Peiris.	2015	To determine whether physical therapy started early after spinal surgery is safe and efficient.	Roland Morris questionnaires (RMQ), Disability Classification Index (DRI), and activity of daily living questionnaire.	Reduction of pain and improvement in functionality	It describes that physical therapy started early and started in the first four weeks after surgery does not increase the potential for a new advent and there is a moderate improvement in the reduction of pain.
Santana-Ríos JS, Chávez-Arias DD, Coronado-Zarco R, Cruz-Medina and Santanários Nava-Bringas T.	2014	To determine the value of different rehabilitation interventions in the postoperative treatment of patients with symptomatic HDL.	Search in electronic databases from January 2000 to October 2012. Two independent reviewers certified to use the PEDro scale assessed the trials included in the PEDro scale.	Patients with herniated discs show improvement in quality of life and functionality when treated either surgically or conservatively, and a follow-up period of two years. The results of early post-surgical activity are usually excellent and without complications.	An immediate rehabilitation program is recommended in patients after microdiscectomy for the first time. Cognitive intervention with positive reinforcement along with exercise is an effective treatment. It is also considered an alternative to spinal fusion in patients with postoperative HDL with recurrence of symptoms after a first intervention.
Alison Reston, Chris Wright, Peter Goodwin,	2011	To evaluate the efficacy of physical	Roland Morris questionnaire, Eva visual	There is a reduction in pain, but long-term intervention is	Inconclusive evidence for the relevance of outpatient

Melanie Calvert and Nick Fremente.		therapy intervention in patients after the first lumbar cystectomy, short-term (3 months) and long-term (12 months) outcomes.	analogue scale, global perceived effect, Oswestry disability index and Low Back Pain Rating Scale for general impairment.	necessary, since in the short term there have not been so many improvements.	physiotherapy after the first lumbar disectomy has been identified. There is a potential benefit where there is short-term improvement of disability, but more intensive intervention is needed to warrant in-depth consideration.
You-Sin Kim Jaebum Park, Jae Kun Shim	2010	To compare the effects of backward locomotion aquatic exercise and machine progressive resistance exercise on lumbar extension strength in patients undergoing discectomy for lumbar disc herniation.	For each test, maximal voluntary lumbar extension isometric strength was measured at 7 trunk positions (72°, 60°, 48°, 36°, 24°, 12°, and 0° trunk angle).	The progressive resistance and backward water locomotion exercise groups showed increases in lumbar extension strength after the first 6 weeks of training, although they were not statistically different from the CON group. After a second 6-week training, the progressive resistance exercise and backward water locomotion groups showed statistically significant increases in their strength levels compared to the CON group.	The results obtained suggest that the aquatic backward locomotion exercise is as beneficial as progressive resistance exercise to improve lumbar extension strength in patients after lumbar discectomy surgery.
Celal B. Erdogmus, Karl-Ludwig Resch, Ronald Sabitzer, HorstMu¨ller, Martin Nuhr, Andreas Scho¨ggl, Martin Posch, Wolf Osterode, Karl Ungersbo¨ck, andGerold R. Ebenbichler.	2007	Experience the relevance of physiotherapy-based rehabilitation starting one week after disc herniation surgery.	Low back pain rating scale (LBP-RS), Likert scale, German version of the State Trait Anxiety Inventory and Giessen test.	At the end of physical therapy, the low back pain assessment scale (LBP-RS) obtained a significant improvement in the treated group than in the group in which they did not have the help of rehabilitation through physical therapy.	Physical therapy is safe and effective after the first surgery for herniated discs when compared to patients who have not undergone any type of treatment.
Cíntia Johnston, Eduardo Paglioli and Eliseu Paglioli	2006	To stimulate the effect of physical therapy intervention on functional and pain score in patients undergoing lumbar disc	Functionality was measured by the Roland Morris score and pain intensity by the visual analogue pain scale	Reduction of pain and increased functionality of patients.	The previous intervention of physical therapy contributed positively, there was an improvement in the functional status and a reduction in pain in the first two months after the HDL surgical procedure.

		herniation surgery.			

Raymond W. J. G. Ostelo, Henrica C. W. de Vet, Gordon Waddell, Maria R. Kerckhoffs, Pieter Leffers and Maurits van Tulder	22003	The purpose of this systematic review was to consider the efficacy of treatments that are used in the rehabilitation process after lumbar disc surgery.	Visual analog scale (VAS), Roland Disability questionnaire, physical examination results, such as: range of motion, flexibility, and muscle strength.	There was a decrease in pain, but there is no strong evidence for treatment started early, but there is strong evidence that treatments started 6 to 6 weeks after surgery and intensive exercise are more effective in the functional status and the patient's return to their work environment.	Exercises started after 4 to 6 weeks of lumbar disc surgery are more effective and there is no recovery rate for these patients.
Marcelo Wajchemberg; Leonardo Pires; Reynaldo C. Rodrigues; Karina S. Mano; Morgana de Sá Sottomaior; Moisés Cohen; Rene J. Abdalla; Eduardo B. Puertas	2002	To evaluate the results after undergoing a rehabilitation protocol based on hydrotherapy.	Visual analog scale by orthopedists and physiotherapists at the Sports Trauma-Orthopedics Center (CETE) of the Department of Orthopedics and Traumatology of the Paulista School of Medicine - Federal University of São Paulo, activities of daily living (ADL).	Activities of daily living that in the initial period: 21.6% of the maximum frequency, reached 99.3% in the 4th month after surgery. The pain, during evaluation, was 83% intense in the preoperative period and after rehabilitation the symptom was completely resolved.	The data suggest good results in physical therapy treatment, with hydrotherapy, in patients undergoing surgical treatment of lumbar disc herniation.
GunillaKjellby-Wendt, Sven G. Carlsson, and JormaStyf	2002	Experience the relevance of physiotherapy-based rehabilitation starting one week after disc herniation surgery.	Multidimensional pain inventory, pain intensity and location were also evaluated, lumbar and hip mobility assessment, elevation test and a psychometric assessment, consisting of the Beck Depression Inventory.	Patients who actively performed the rehabilitation plan were not recovered and there was no significant correlation between the duration of leg pain before surgery and satisfaction with treatment.	This study showed that the rate of recoveries did not increase for patients who followed the entire initial active rehabilitation program after surgical treatment of herniated discs compared to the group in which they did not use physical therapy.

Gunilla Kjellby-Wendt, Jorma Styf and Sven G Carlsson	2001	To evaluate prevention and early intervention programs after surgery for lumbar disc herniation, using psychometric methods, with two physical therapy rehabilitation programs.	Multidimensional Pain Inventory (MPI), State and Trait Anxiety Inventory, and Beck Depression Inventory. Pain was assessed by the patient's pain drawing and a visual analog scale.	Pain interference improved over time in both groups. However, that group that started treatment earlier improved significantly more than in the late postoperative period.	Both groups improved in pain intensity and anxiety status. The MPI parameter, pain interference, improved more in the initial active treatment group than in the control group.

DISCUSSION

According to Raymond et al. (2003) and Snowdon and Peiris (2015), physical therapy started 4 to 6 weeks after surgery is more effective and helps to improve functionality and reduce the patient's pain in the postoperative period of herniated discs. For the authors, strength, resistance, hip and spine mobility, trunk strengthening and lower limb elevation exercises were the great allies during the intervention process. Snowdon and Peiris (2015) also reinforce that cardiovascular exercises and guidance on ergonomics are also of paramount importance in these cases.

On the other hand, the authors Jonhston; Paglioli; Paglioli (2006) employed the use of transcutaneous electrical stimulation, neural stretching of the sciatica, and flexion stretching of the Williams spine and the patients were encouraged to get out of bed carefully and to walk (initially with a walker and, on the second postoperative day, without support). For the authors, the previous intervention of physical therapy contributed positively, there was a reduction in pain and an increase in the functionality of the patients. Functionality was measured using the Roland Morris score and pain intensity was measured using the visual analogue pain scale.

In the work of Rushton et al. (2011), the content of physiotherapy management was variable and the usual interventions included: mobility exercises, central stability, education/counseling, general rehabilitation and treatment according to the results of the assessment. It is concluded in this article that there is a reduction in pain, but long-term intervention is necessary, since in the short term there were not so many improvements. The Roland Morris questionnaire for functionality, the visual analog pain scale Eva, the

Oswestry disability index and the Low Back Pain Rating Scale for general impairment were applied.

According to Erdogmus et al. (2007), physical therapy is safe and effective after the first disc herniation surgery. Isometric strengthening exercises were performed for the back, hip extensors and abdominals, stretching exercises, ergonomics training, such as sitting, standing and balance exercises, massages performed for 30 minutes in the neck region. In view of this fact, a significant response was obtained in pain reduction, compared to patients who did not obtain rehabilitation based on physical therapy. But the authors Wajchemberg et al. (2002) considered rehabilitation through hydrotherapy a useful method, and all those involved also obtained the same benefits cited by Erdogmus et al. (2007) after this intervention.

Like Erdogmus et al. (2007), the authors Wendt; Carlsson; Styf (2002) performed the same physiotherapeutic intervention, but the participants also obtained illustrative and playful guidance from the professionals so that they could perform the exercises at home. This study showed that the rate of reoperations did not increase for patients who followed the entire initial rehabilitation program after the surgical procedure for disc herniation compared to the group in which they did not undergo the physical therapy intervention.

In the study by Santana-Ríos et al. (2014), an immediate rehabilitation program after surgical intervention reduces the length of hospitalization and pain, provides in advance the start of walking independently and the return of daily activities, minimizes the fear of injury to the act of movement, changes in behavior in the face of pain and achieves greater mobility of the spine. For the authors of the study, lumbar stabilization exercises, progressive strengthening of the lumbar, abdominal and pelvic muscles, in addition to stretching, bring satisfactory benefits in post-surgical treatment.

In harmony with Santana-Ríos et al. (2014), the authors Wendt; Styf; Carlsson et al. (2001) argue that physical therapy rehabilitation programs after dypeletomy are effective mainly in reducing pain being carried out early, reinforce that conventional rehabilitation performed in conjunction with a biopsychosocial model, offers patients a superior understanding and a better way to deal with pain, reduces fear of movement, improvement of the disability index and ability to work, thus enhancing the effects of physical therapy rehabilitation.

In the present study, You-Sin et al. (2010) performed post-discectomy rehabilitation consisting of backward locomotion exercises and progressive resistance exercises twice a week from the 6th week of operation, through aquatic physical therapy. According to the authors, this approach offers several benefits compared to physical therapy on the ground,

in addition to allowing a greater range of motion, water reduces weight-bearing tensions, which allows for more aggressive and early rehabilitation without risking the patient, overloading the spine and also assists in the healing process. Increased lumbar extensor strength, aerobic capacity, functionality in activities, gain in range of motion, improved independence in personal care, sleep, and reduced use of analgesics are benefits achieved through the aquatic rehabilitation used by the authors.

CONCLUSION

Although some clinical interventions present in this study did not show clinical relevance for the early introduction of physical therapy in the postoperative period of lumbar disc herniation and emphasized long-term treatment, there were results that highlighted the importance of physical therapy started in the first week, or 4th to 6th weeks after the surgical intervention. It can be concluded that the presence of physical therapy in the postoperative period of lumbar disc herniation has shown clinical prominence for the reduction of pain, functional improvement, reduction of a possible new advent and the success of a probable return of the patient to his daily routine.

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