

SPORTS PRACTICE AFTER LUMBAR DISCECTOMY IN NON-PROFESSIONAL ATHLETES: A CROSS-SECTIONAL STUDY

PRÁTICA ESPORTIVA APÓS DISCECTOMIA LOMBAR EM ATLETAS NÃO PROFISSIONAIS: ESTUDO TRANSVERSAL

PRÁCTICA DEPORTIVA TRAS DISCECTOMÍA LUMBAR EN ATLETAS NO PROFESIONALES: UN ESTUDIO TRANSVERSAL

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ABSTRACT

Introduction: Most athletes treated for lumbar disc herniation return to play between 3 and 9 months after conservative or surgical treatment. In the last two decades, the general population increased the practice and participation in amateur competitions, being more prone to overload injuries. **Objectives:** To evaluate sports practice after lumbar discectomy in non-professional athletes. **Methods:** In the last five years, a digital questionnaire was sent to patients submitted to up to two levels of open discectomy. After signing the informed consent form, the patients were instructed to answer the questionnaire with personal and clinical data related to disc treatment and sports practice after the procedure. **Results:** Of 182 contacted patients, a hundred answered the questionnaire; 65% practiced regular sports activities before surgery. From patients who practiced sports before surgery, 75.38% returned to sports activities after the procedure. 39.29% returned between 3 and 6 months. Only 12.31% referred to impaired sports performance, while 56.92% performed unaffected, and 21.54% reported improved performance after surgery. Prior sports practice, participation in amateur competitions, and regular core strengthening were significantly associated with sports practice after surgery ($P < 0,05$). **Conclusions:** From the participants who had already practiced sports before surgery, 75.38% returned after the surgical procedure. Sports practice before surgery, participation in amateur competitions, and regular core strengthening were positively associated with a return to sports practice after lumbar discectomy. The study shows that core strengthening should be encouraged and recommended to all non-professional athletes who intend to return to sports after microdiscectomy surgeries. **Level of Evidence: III; Cross-Sectional Retrospective Study.**

Keywords: Return to Sport; Discectomy; Sports.

RESUMO

Introdução: A maioria dos atletas tratados de hérnia de disco lombar volta a jogar em um período entre 3 e 9 meses, após tratamento conservador ou cirúrgico. Nas últimas duas décadas, a população em geral aumentou a prática e participação em competições amadoras; sendo mais propenso a lesões por uso excessivo. **Objetivos:** Avaliar a prática esportiva após discectomia lombar em atletas não profissionais. **Métodos:** Um questionário digital foi enviado aos pacientes submetidos à discectomia aberta de até 2 níveis, nos últimos cinco anos. Após a assinatura do termo de consentimento livre e esclarecido, os pacientes foram orientados a responder o questionário com dados pessoais e clínicos relacionados ao tratamento e à prática esportiva após o procedimento. **Resultados:** Dos 182 pacientes contatados, cem responderam ao questionário; destes, 65% praticavam atividades esportivas regulares antes da cirurgia. Dos pacientes que praticavam esportes antes da cirurgia, 75,38% retornaram à atividade esportiva após o procedimento. 39,29% retornaram entre 3 e 6 meses. Apenas 12,31% relataram piora no desempenho esportivo, enquanto para 56,92% o desempenho não foi afetado e 21,54% relataram melhora no desempenho após a cirurgia. A prática esportiva prévia, a participação em competições amadoras e o fortalecimento regular do core foram significativamente associados à prática esportiva após a cirurgia ($P < 0,05$). **Conclusões:** Dos participantes que já praticavam esportes antes da cirurgia, 75,38% retornaram após o procedimento cirúrgico. A prática esportiva prévia à cirurgia, a participação em competições amadoras e o fortalecimento regular do core foram positivamente associados ao retorno à prática esportiva após a discectomia lombar. O estudo mostra que o fortalecimento do core deve ser incentivado e recomendado para todos os atletas não profissionais que pretendem retornar ao esporte após cirurgias de microdiscectomia. **Nível de Evidência III; Estudo Transversal Retrospectivo.**

Descritores: Volta ao Esporte; Discectomia; Esportes.

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RESUMEN

Introducción: La mayoría de los atletas tratados por hernia de disco lumbar regresan a jugar en un período de entre 3 y 9 meses, luego de un tratamiento conservador o quirúrgico. En las últimas dos décadas, la población en general incrementó la práctica y participación en competencias aficionadas; siendo más propensos a sufrir lesiones por sobrecarga. **Objetivos:** Evaluar la práctica deportiva posterior a discectomía lumbar en deportistas no profesionales. **Métodos:** Se envió un cuestionario digital a los pacientes sometidos a discectomía abierta de hasta 2 niveles, en los últimos cinco años. Tras firmar el consentimiento informado, se instruyó a los pacientes para que respondieran el cuestionario con datos personales y clínicos, relacionados con el tratamiento discal y la práctica deportiva posterior al procedimiento. **Resultados:** De 182 pacientes contactados, cien respondieron el cuestionario; de estos, el 65% practicaba actividades deportivas regulares antes de la cirugía. De los pacientes que practicaban deporte antes de la cirugía, el 75,38% retornó a la actividad deportiva después del procedimiento. El 39,29% volvió entre los 3 y 6 meses. Solo el 12,31% refirió deterioro del rendimiento deportivo, mientras que para el 56,92% el rendimiento no se vio afectado y el 21,54% refirió mejora del rendimiento después de la cirugía. La práctica deportiva previa, la participación en competencias aficionadas y la realización regular de fortalecimiento del core, se asociaron significativamente con la práctica deportiva tras la cirugía ($P < 0,05$). **Conclusiones:** De los participantes que ya practicaban deporte antes de la cirugía, el 75,38% regresaron después del procedimiento quirúrgico. La práctica deportiva previa a la cirugía, la participación en competencias de aficionados y la realización de un fortalecimiento core periódico se asociaron positivamente con la vuelta a la práctica deportiva tras la discectomía lumbar. El estudio muestra que se debe alentar y recomendar el fortalecimiento del core a todos los atletas no profesionales que tengan la intención de volver al deporte después de las cirugías de microdiscectomía. **Nivel de Evidencia III; Estudio Retrospectivo Transversal.**

Descriptores: Volver al Deporte; Discectomía; Deportes.

INTRODUCTION

Lumbar disc herniation (LDH) incidence is about 5 to 20 cases per 1,000 adults annually, being most common in people in their third to the fifth decade of life, with a male-to-female ratio of 2:1. Since many individuals presenting degenerative disc findings in MRI have no complaints, the estimated prevalence of symptomatic herniated disc of the lumbar spine is about 1-3 percent.^{1,2}

Risk factors for disc herniation include smoking, work and sports activities with repetitive loads, and genetic predisposition.³

Lumbar spine disc degeneration is more common in professional athletes than in the general population, with a reported prevalence of up to 58%, varying in different sports modalities.^{4,5}

Microdiscectomy is still the gold standard surgical procedure for treating lumbar disc herniation. However, endoscopic discectomy techniques are also being used with good results in the general population and athletes.⁶

Spontaneous resorption disc herniation is frequent, mainly for extrusion and sequestration; 60-90% of patients can be successfully managed with conservative treatment, which includes overload avoidance, medications, physical therapy, and epidural steroid injection.⁷⁻¹⁰

Most studies with professional athletes treated for lumbar disc herniation found a return-to-play rate of 80-90% in a period between 3 and 12 months, regardless of surgery or non-operative care.^{4,11-15}

In the last two decades, the general population increased the practice of high-demand sports and participation in amateur competitions, being more prone to overload injuries like disc herniation.¹⁶ However, there are no studies about the return-to-play rate after lumbar discectomy in amateur sports practitioners.

The study aimed to evaluate sports practice after lumbar discectomy in non-professional athletes.

METHODS

A cross-sectional study was performed using a convenience sample. The study followed the norms of the institution's Ethics Committee on Human Experiences and was approved by the Institutional Review Board (CAAE: 27043419.0.0000.5492). All participants signed the free and informed consent terms before completing the form. Data from both genders patients, between 18 and 70 years old, with lumbar or radicular pain caused by disc herniation, submitted to open discectomy by the same surgical team; from January 2014 to December 2018, all patients had at least one follow-up.

A digital questionnaire was e-mailed to 182 patients using the Google Forms® platform. Participants were instructed to give personal and clinical information regarding LDH treatment and returning to sports practice.

Individuals who refused to sign the Informed Consent Form

(ICF), those with cauda equina syndrome or neurological deficit, with motor strength below grade 3, patients treated with lumbar fusion, and professional athletes were excluded.

A descriptive analysis of the results was performed to obtain frequency tables to characterize the participants. The absolute frequency and percentage were used for categorical variables to describe the results.

The chi-square test assessed the association between the variables of interest. The significance level was set at 5%, and all analyses were performed with R statistics software, version 3.3.1.

RESULTS

Among 182 contacted patients, one hundred answered the questionnaire; just over half were male, and about two-thirds were aged between 31 and 50. When asked about symptoms, 43% have suffered for over a year; most referred to back pain and radiating pain, sensitive dysfunction, and some motor weakness. (Table 1)

Most participants (65%) played sports before surgery, with great variation in training frequency, ranging from one to 14 times/week, considering all modalities practiced. Notably, only 9% of respondents started practicing their respective modalities less than one year before the injury; a considerable rate of 30% participated in amateur championships, and 39% had professional coaching. (Table 2)

Evaluating the postoperative data, 56% of the patients returned to practice sports, and 54% continued to perform preventive core strengthening. Of patients who returned to play sports, most (39.29%) did it between 3 and 6 months, and just 8.93% referred to surgery-impaired sports practice. (Table 3)

Considering sports practice before surgery, of the 35 patients previously sedentary, 20% started some sports activity after discectomy. From those who already practiced sports (N=65), 75.38% returned after surgery, proving a significant association between prior practice and return-to-play ($P < 0.001$); just 12.31% referred impaired sports performance, while for 56.92%, performance was not affected, and 21.54% reported improved performance after surgery ($P = 0.016$). (Table 4)

The factors that proved to be significantly associated with sports practice after surgery were Prior practice ($P < 0.001$), participation in amateur competitions ($P = 0.001$), and carrying out regular core strengthening ($P = 0.011$). (Table 5)

DISCUSSION

Return to sports practice after lumbar disc herniation has been widely studied in professional athletes.^{4,5,11-15} So far, little is said about sports practice in amateur and recreational athletes.

In the general population, lumbar disc herniation is common, with non-operative treatment being effective in most situations.

Table 1. Epidemiological data and symptoms.

Variable	Absolute frequency (N = 100)	%
Gender		
Female	46	46.00%
Male	54	54.00%
Age		
until 30 years	4	4.00%
31 – 40 years	25	25.00%
41 – 50 years	40	40.00%
51 – 60 years	14	14.00%
60 – 70 years	16	16.00%
No answer	1	1.00%
Period of symptoms		
< 1 month	8	8.00%
1 – 3 months	12	12.00%
3 – 6 months	18	18.00%
6 months – 1 year	19	19.00%
> 1 year	43	43.00%
Pain		
Back pain	2	2.00%
Radiating pain	14	14.00%
Back Pain worse than radiating	14	14.00%
Radiating worse than back pain	35	35.00%
Back and radiating pain in the same intensity	35	35.00%
Sensitive symptoms		
No	22	22.00%
Yes	78	78.00%
Motor weakness		
No	41	41.00%
Yes	58	58.00%
No answer	1	1.00%

Table 2. Sports practice before discectomy.

Variable	Absolute frequency (N = 100)	%
Sports practice before surgery		
No	35	35.00%
Yes	65	65.00%
Weekly practice		
01 – 02	13	13.00%
02 – 04	12	12.00%
03 – 04	9	9.00%
04 – 06	10	10.00%
05 – 07	4	4.00%
06 – 08	10	10.00%
08 – 11	3	3.00%
10 – 14	9	9.00%
No answer	30	30.00%
Time of practice		
< 1 year	9	9.00%
1 – 5 years	25	25.00%
5 – 10 years	13	13.00%
> 10 years	18	18.00%
No practice	35	35.00%
Amateur competitions		
No	55	55.00%
Yes	30	30.00%
No answer	15	15.00%
Professional coaching		
No	44	44.00%
Yes	39	39.00%
No answer	17	17.00%

Table 3. Sports practice after discectomy.

Variable	Absolute frequency (N = 100)	%
Sports practice after surgery?		
No	44	44.00%
Yes	56	56.00%
Regular core strengthening after surgery		
No	37	37.00%
Yes	54	54.00%
No answer	9	9.00%
Variable	Absolute frequency (N=56)	%
Sports practice after:		
< 3 months	7	12.50%
3 – 6 months	22	39.29%
6 – 1 year	13	23.21%
> 1 year	14	25.00%
Did the surgery impair the sports performance?		
No	39	69.64%
No, the performance improved	12	21.43%
Yes	5	8.93%

Table 4. Outcomes correlated with prior sports practice.

Variable	Sports practice before surgery				P Value
	No		Yes		
	n	%	n	%	
Sports practice after surgery?					< 0.001*
No	28	80.00%	16	24.62%	
Yes	7	20.00%	49	75.38%	
Did the surgery impair the sports performance?					0.016
No	20	57.14%	37	56.92%	
No, the performance improved	0	0%	14	21.54%	
Yes	3	8.57%	8	12.31%	
No answer	12	34.29%	6	9.23%	
Total	35	100%	65	100%	

Surgical treatment is normally reserved for cases with neurological impairment, persistent pain, and failure of conservative treatment after approximately six weeks.^{1,2,10,17}

The indication for discectomy in professional athletes uses these same concepts and other peculiarities, like seasonal schedules, the need for early recovery, greater availability of time for rehabilitation, and long-term career expectations. Surgeons are often more aggressive in recommending surgery to professional athletes than the public.¹⁸

In the last two decades, more people have engaged in organized sports.¹⁹ Despite being amateur, of the 65 patients referred to practice sports before surgery, about 90% had already practiced for at least one year, and a considerable amount participated in amateur competitions and had professional coaching, demonstrating to face sports seriously.

Regardless of being an amateur or recreational practitioner, the concern about returning to sports activities after a surgical procedure is increasingly common in general patients.

Considering just patients who practiced sports before surgery, the RTP rate was 75.38%, slightly below the 80-90% rate described for professional athletes after discectomy. Hsu et al. studied the outcome of 342 professional athletes from the NFL, NBA, NHL, and MBL treated for LDH and found differences in RTP rate.^{4,11-15}

Table 5. Variables associated with sports practice after discectomy.

Variable	Sports practice after surgery				P Value
	No		Yes		
	n	%	n	%	
Sports practice before surgery					<0.001*
No	28	63.64%	7	12.50%	
Yes	16	36.36%	49	87.50%	
Period of symptoms:					0.682
< 1 month	5	11.36%	3	5.36%	
1 - 3 months	6	13.64%	6	10.71%	
3 - 6 months	9	20.45%	9	16.07%	
6 months - 1 year	7	15.91%	12	21.43%	
> 1 year	17	38.64%	26	46.43%	
Amateur competitions					0.001*
No	27	61.36%	28	50.00%	
Yes	3	6.82%	27	48.21%	
No answer	14	31.82%	1	1.79%	
Motor weakness					0.909
No	19	43.18%	22	39.29%	
Yes	25	56.82%	33	58.93%	
No answer	0	0%	1	1.79%	
Sensitive symptoms					0.376
No	12	27.27%	10	17.86%	
Yes	32	72.73%	46	82.14%	
Regular core strengthening after surgery					0.011*
No	21	47.73%	16	28.57%	
Yes	15	34.09%	39	69.64%	
No answer	8	18.18%	1	1.79%	
Total	44	100%	56	100%	

In a systematic review of the literature, the reported recovery time for athletes undergoing lumbar discectomy to return to active play ranged from 2.8 to 8.7 months; however, the definition of RTP varied among the articles.²⁰ In our study, most participants referred to practice sports between 3 to 6 months after surgery, but it should be considered that RTP for recreational and amateur athletes may be less intense.

The minority of our patients are referred to impaired sports practice after surgery. Professional athletes have more objective criteria for performance evaluation. Nair et al. found that performance varied between 64.4% and 103.6% in professional athletes after discectomy, and the average reported career longevity ranged from 2.6 to 4.8 years.²⁰ Another study with 23 NFL professional players submitted to lumbar discectomy found no significant performance change when comparing pre-injury and post-injury statistics.²¹

Carrying out regular core strengthening after surgery was positively associated with our patients' return to sports practice and participation in amateur competitions and sports habits before surgery. According to Watkins RG III, the desire to return to sport, added to the player's experience, is a positive predictor for a good clinical outcome; standardization of postoperative rehabilitation and sports-specific training program after lumbar disc injury is a critical factor for a high RTP rate, in a high level of performance.²²

The study focused on sports practice after lumbar discectomy in recreational and amateur sports practitioners, a common reality in spine surgeon clinics. The small number of participants is a limitation of the study, mainly considering that from 182 eligible patients, just one hundred answered the questionnaire. Other studies with more participants are important to clarify the rate and time of RTP rate in the general population after lumbar discectomy.

CONCLUSION

From the participants who had already practiced sports before surgery, 75.38% returned after the surgical procedure.

Just 12.31% of participants reported impaired sports performance after discectomy, while for the majority, performance was not affected or even improved after surgery.

Sports practice before surgery, participation in amateur competitions, and regular core strengthening were positively associated with returning to sports practice after lumbar discectomy.

All authors declare no potential conflict of interest related to this article.

CONTRIBUTIONS OF THE AUTHORS: Each author contributed individually and significantly to the development of the manuscript. MK: Conceptualization, methodology, resources, writing. NA: Conceptualization, validation, formal analysis, resources, writing. LRG: Conceptualization, investigation, data curation, writing. LBO: Conceptualization, investigation, data curation, writing. RBRC: Conceptualization, investigation, data curation, writing. MW: Conceptualization, resources, supervision, writing. DEM: Conceptualization, resources, supervision, project administration, writing.

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