

Impact of Psychosocial and Clinical Variables on Fear-Avoidance of Physical Activity after Lumbar Surgery

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Background

The Fear-Avoidance Model posits that fear and injury lead to avoidance of physical activity in patients with low back pain. This model could also explain decreased activity after recuperation from lumbar surgery.

Many factors contribute to fear-avoidance behavior, including greater surgical complexity, poor functional or technical outcome, lower self-efficacy, general anxiety, and disability due to pain.

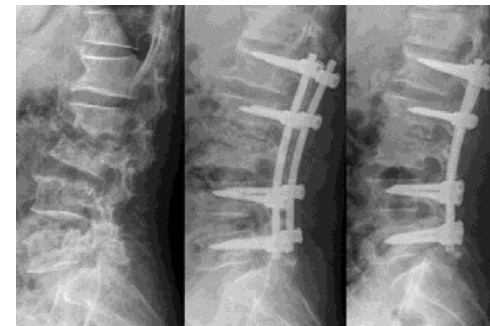
All of these variables can contribute to lowered physical activity after recuperation from surgery.



Fear of activity

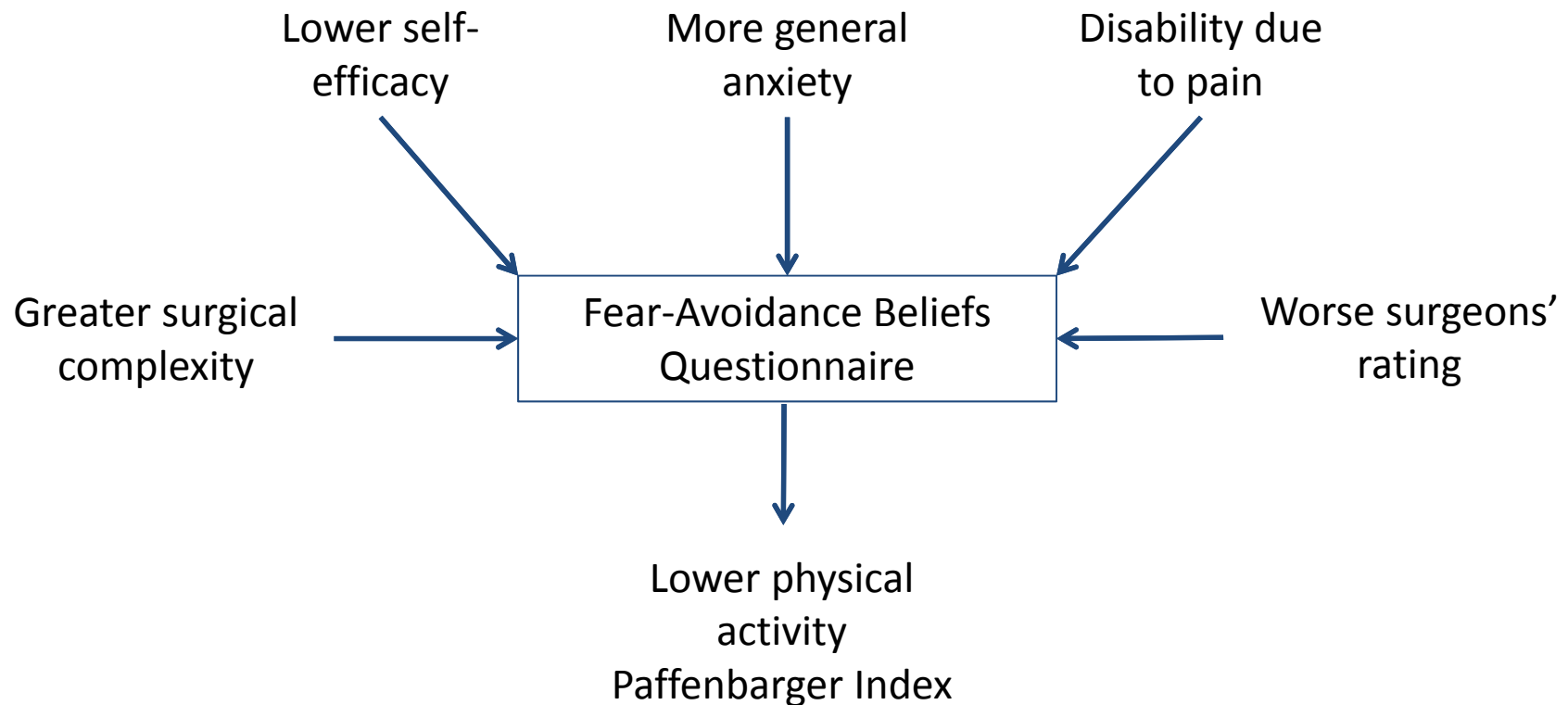


Decreased physical activity



Fear-Avoidance Model

Fear-avoidance behavior can be measured by the Fear-Avoidance Beliefs Questionnaire and resulting decreased physical activity can be measured by the Paffenbarger Physical Activity and Exercise Index (PAEI)

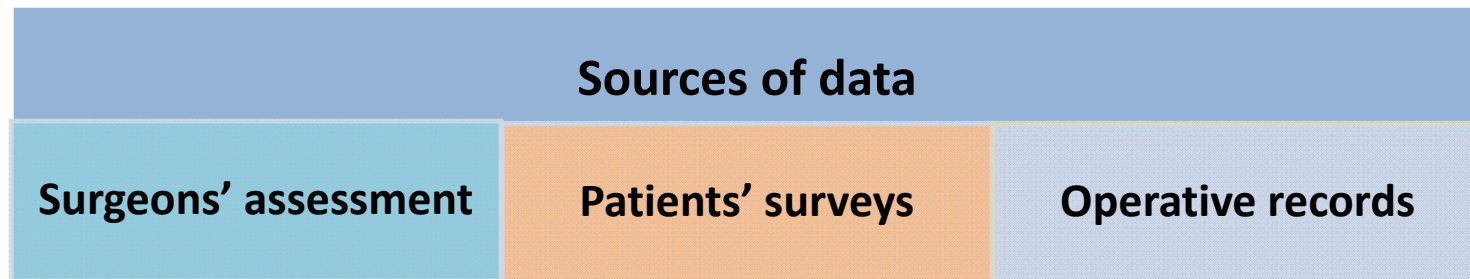


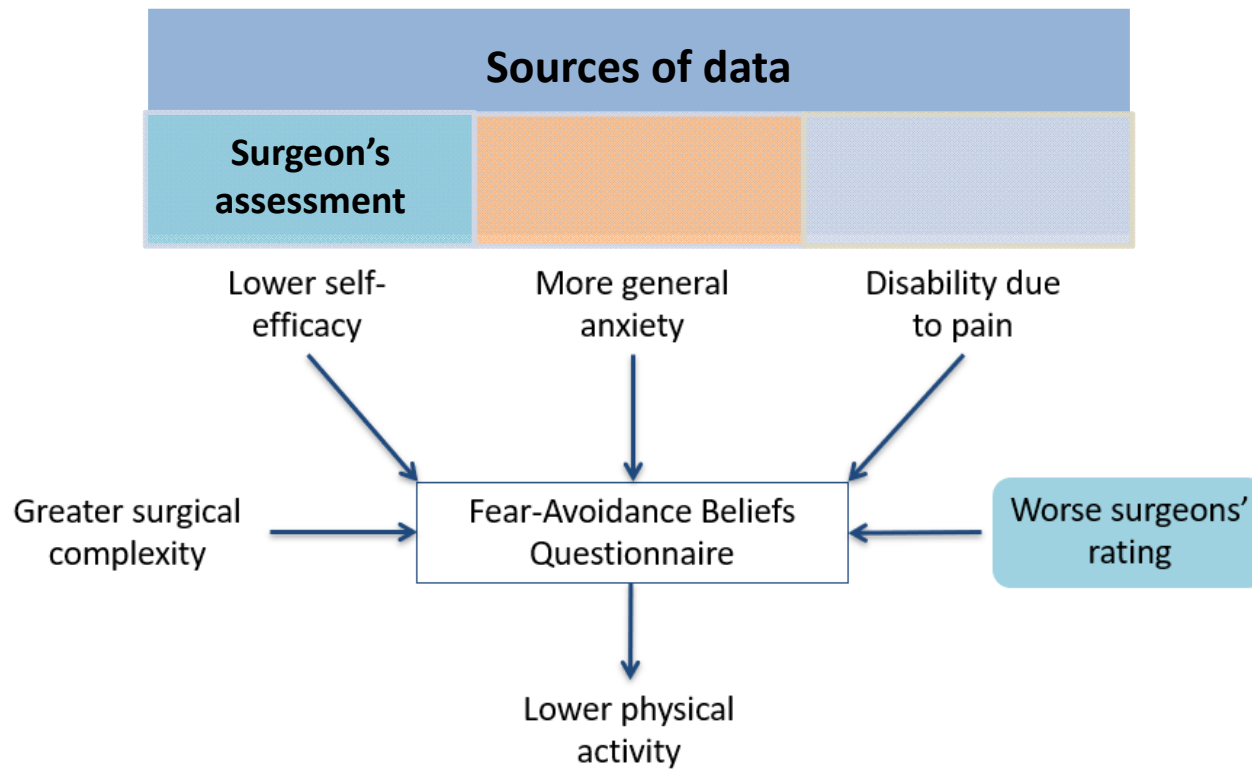
Objectives and Hypothesis

- Our objective was to ascertain if surgical complexity and technical outcome contribute to fear-avoidance behavior of physical activity above traditional psychosocial variables.
- We hypothesized that more complex surgery and worse technical outcome would contribute to more fear-avoidance.

Methods

- This analysis was based on enrollment data for 260 patients from a randomized trial to increase physical activity after recuperation from multi-level, fusion lumbar surgery.
- Patients were enrolled during a routine 3-month postoperative visit. This time frame was chosen to allow sufficient time to recuperate from surgery. Surgeons gave clearance for patients to increase physical activity.



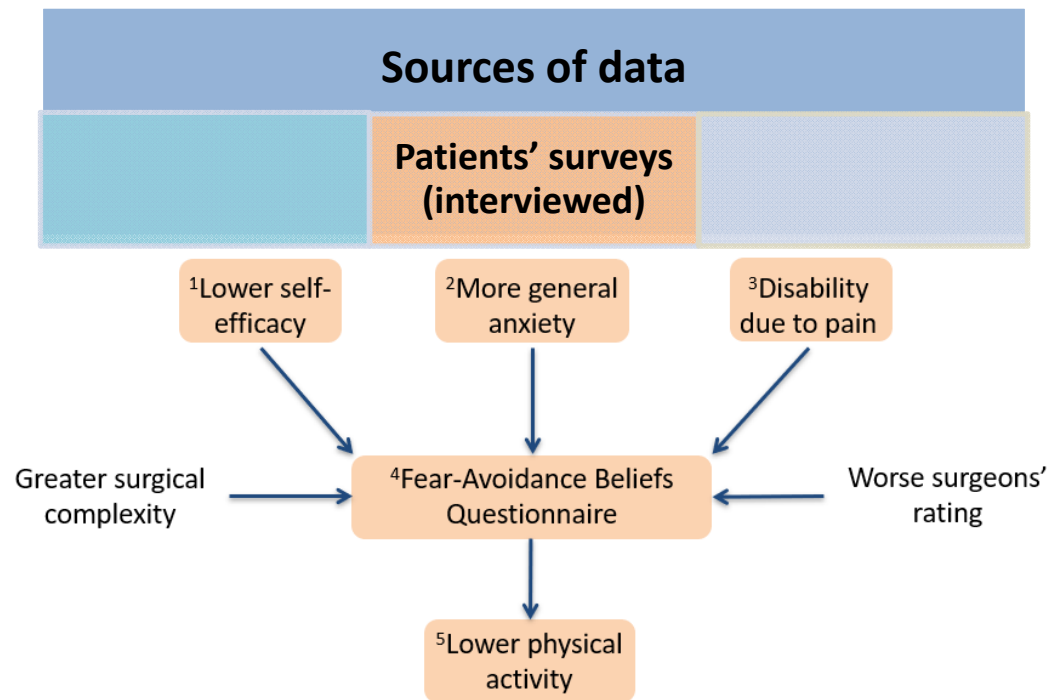


Surgeons were asked to rate the current outcome of surgery with the following question at the time of enrollment:

“Right now, how would you rate the technical outcome of surgery?”



- **Technical outcome (0=worst, 10=best)**



- ¹ **Motivational and Volitional Self-Efficacy Scale** (3-12, higher is more self-efficacy)
- ² **General Anxiety Disorder Scale (GAD)** (anxiety symptoms, 0-21, higher is more anxious)
- ³ **Oswestry Disability Index (ODI)** (0-100, higher is more disability)
- ⁴ **Fear-Avoidance Beliefs Questionnaire (FABQ)** (0-30, higher is more fear-avoidant)
- ⁵ **Paffenbarger Index** measures kcals/week from blocks walked, stairs climbed, exercise/sports



- ODI
- FABQ
- Motivational and Volitional Self-Efficacy Scale
- GAD
- Paffenbarger Index

Sources of data

Patients' surveys
(interviewed)

Fear-Avoidance Beliefs Questionnaire (FABQ)

Fear-Avoidance Beliefs Questionnaire (physical activity)

Here are some things other patients have told us about their back pain. For each statement please circle any number from 0 to 6 to indicate how much physical activities such as bending, lifting, walking, or driving affect or would affect *your* back pain.

	Completely disagree	0	1	2	3	4	5	6	Completely agree
My pain was caused by physical activity	0	1	2	3	4	5	6		
Physical activity makes my pain worse	0	1	2	3	4	5	6		
Physical activity might harm my back	0	1	2	3	4	5	6		
I should not do physical activities which (might) make my pain worse	0	1	2	3	4	5	6		
I cannot do physical activities which (might) make my pain worse	0	1	2	3	4	5	6		

Generalized Anxiety Disorder Scale (GAD)

GAD - 7				
Over the <u>last 2 weeks</u> , how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Paffenbarger Physical Activity and Exercise Index

Physical Activity (Paffenbarger Index)

Now I would like to ask you about your physical activity. I am interested in different types of activities, like walking, climbing stairs, exercise. Let's first talk about walking.

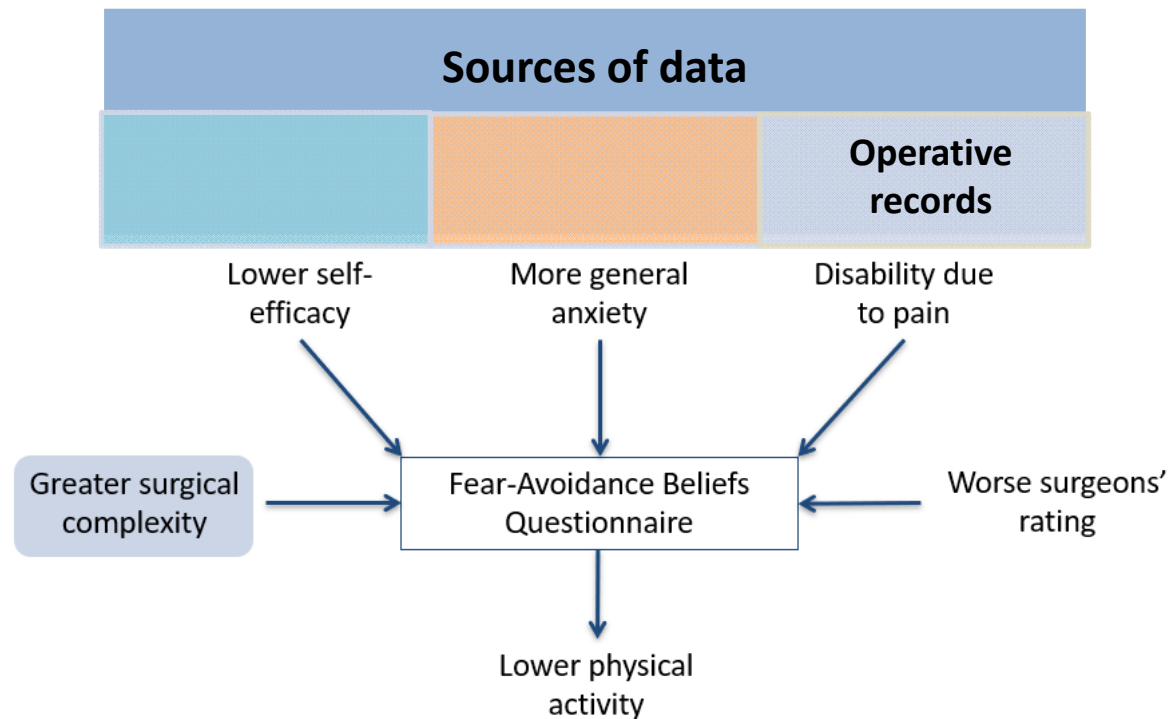
- How many city blocks or their equivalent do you normally walk each day?
(If the patient says 1 mile, find out how many blocks the patient thinks this is. Record blocks.)
_____ blocks/day
- How many flights of stairs do you climb up each day? (Let 1 flight equal 10 steps.)
_____ flights/day

Motivational and Volitional Self-Efficacy Scale

Motivational and Volitional Self-Efficacy

How strongly do you agree or disagree with these statements?

	Strongly disagree	Disagree	Agree	Strongly agree
I am certain that I can be physically active on a regular basis even it is difficult.	1	2	3	4
I am capable of continuing physical activity on a regular basis even if it takes some time until it becomes routine.	1	2	3	4
I am confident that I can resume a physically active lifestyle even if I have relapsed several times.	1	2	3	4



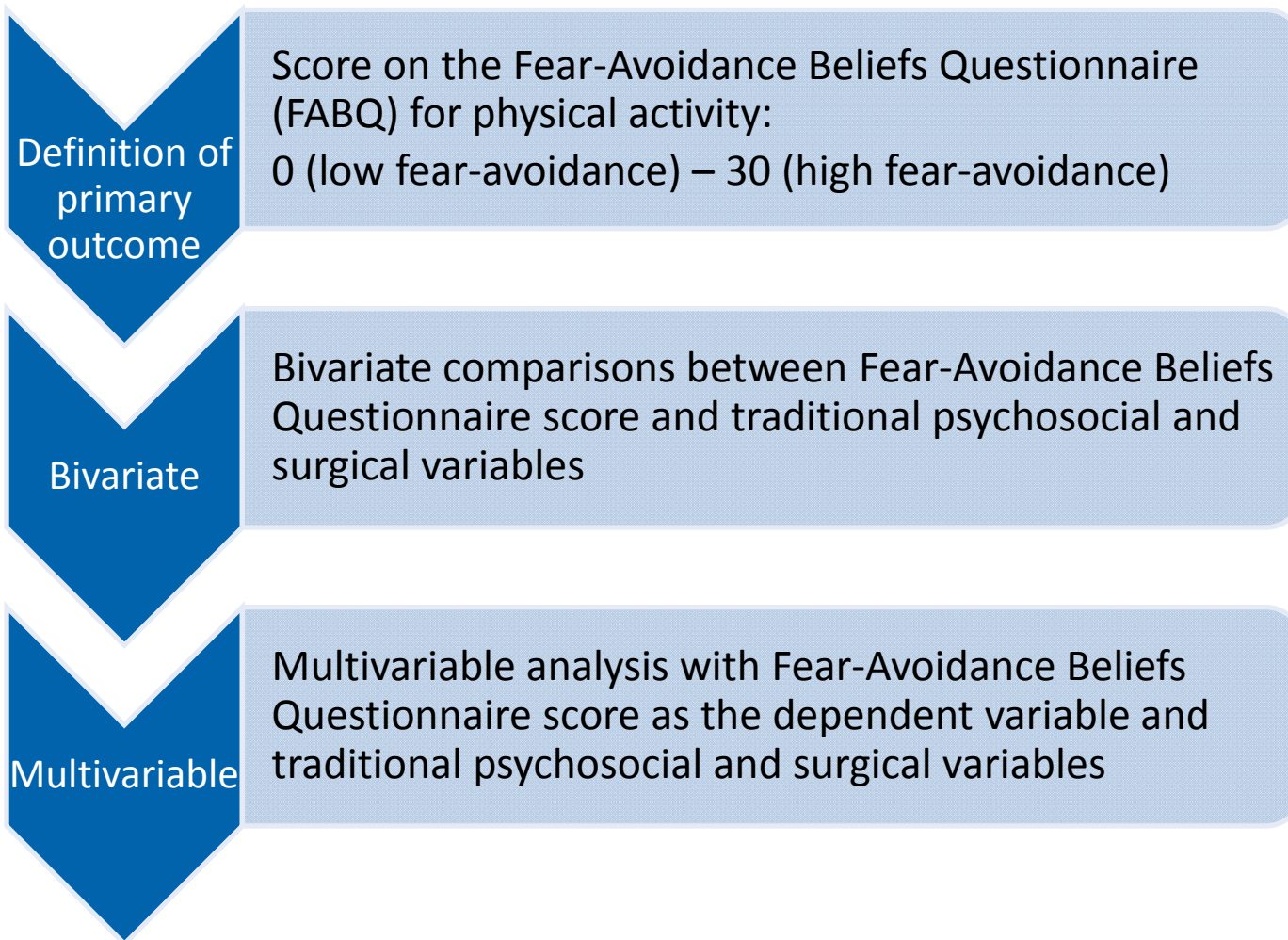
Surgical Invasiveness Index (SII)

- compendium of surgical features
- number of vertebrae involved, decompression, fusion, instrumentation, approach
- points assigned for each feature, maximum of 10 points for each vertebral level
- total score is calculated as the sum of points from all levels
- higher score is greater complexity

HSS
Medical
Record

- **Operative Record**

Data analysis



Results (N=260)

Demographics and Clinical Characteristics	
Age, years (mean)	63
Men	53%
≥3 spinal levels involved	46%
Spinal fusion procedure	86%
Complexity of surgery (mean) ^a	12 (range 1-41)
Surgeons' rating of technical outcome (mean) ^b	8.9 (range 5-10)
Self-efficacy for physical activity (mean) ^c	9.9 (range 3-12)
General anxiety (mean) ^d	3.8 (range 0-21)
Disability from back pain (mean) ^e	34 (range 0-80)
Fear-avoidant behavior (mean) ^f	13 (range 0-30)
^a Surgical Invasiveness Index (maximum 10 points per vertebral level , higher is more complex procedure)	
^b range 0-10, higher is better outcome	
^c Motivational and Volitional Self-Efficacy Scale (range 3-12, higher is more self-efficacy)	
^d General Anxiety Disorder Scale (range 0-21, higher is more anxiety)	
^e Oswestry Disability Index (range 0-100, higher is more disability)	
^f Fear-Avoidance Beliefs Questionnaire (range 0-13, higher is more effect of physical activity on back pain)	

Results: Multivariable analysis

More fear-avoidance associated with....

Variables	Bivariate		Multivariable	
	Estimate	P value	Estimate	P value
Less self-efficacy	1.17	<.0001	.72	.01
More general anxiety	.52	<.0001	.27	.02
More disability	.19	<.0001	.12	.0007
Worse surgeons' rating	.91	.04	--	--
More complex surgery	.07	.40	--	--

Conclusions

- Fear-avoidance of physical activity after lumbar surgery is more associated with traditional psychosocial variables of less self-efficacy, general anxiety, and disability due to pain as opposed to surgical variables.
- Fostering physical activity after lumbar surgery will require addressing a comprehensive panel of variables related to psychological well-being and perceived risks of physical activity.

Disclosure Declaration

None of the authors has any potential conflict of interest.