

ACUTE EFFECTS OF LUMBAR ARTHRODESIS REHABILITATION CORE EXERCISES. BIOFEEDBACK, SUPERVISED OR AUTONOMOUSLY: WHICH IS THE BETTER METHODS? EXPLORATORY STUDY.

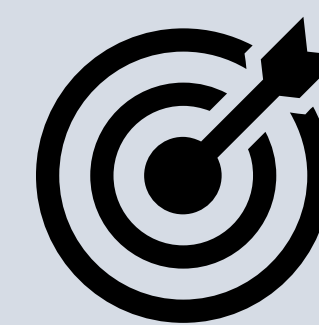
Marin L. PT PhD*, Chiodaroli M. PT, Carlone N. PT, Borsatti D. MD, Manzoni F. MD PhD, Pedrotti L. MD, Re F. PT, Patanè P. PhD, Febbi M. PT PhD



Introduction

Lumbar spondylolisthesis is initially managed with conservative treatments. In case of failure, lumbar interbody arthrodesis surgery (LIF) may be necessary. After LIF, due to pain and kinesiophobia, patients may rely on ankle rather than spinal proprioceptors, impairing postural control and recovery. Core perception and activation exercises may improve outcomes, but optimal timing and methods remain unclear.

Aim



To evaluate and compare the acute effects of three rehabilitations methods on balance and spine alignment of patients underwent LIF.

Methods

Age: 58.67±8.49



3 Groups
Same Core exercises
Different tools



Visual biofeedback
They used a monitor, an inertial sensor, placed on the sternum and a stabilometric platform (Euleria Health, Rovereto, Italy)



Checked mirror
They did the exercises with the corrections of the physiotherapist



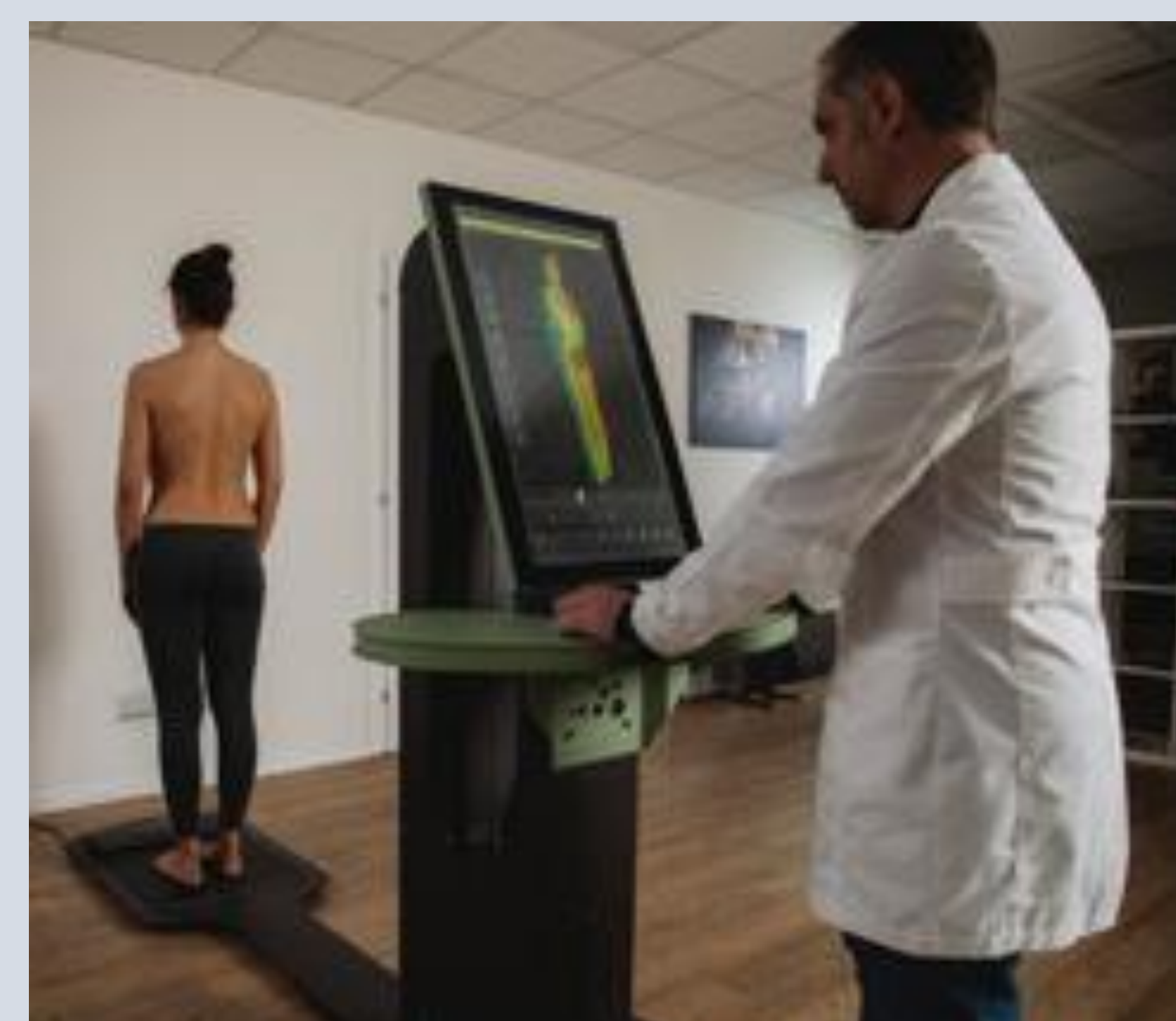
Checked mirror
They did the exercises independently

Assessments

Were carried out: Before (T0) and After Core exercises (T1)

In T0, participants were asked to assume the most comfortable position.

In T1, they were asked to assume the most correct posture possible, using the sensorimotor information learned during the intervention.



We used the Spine3D (Sensormedica, Guidonia, Rome, Italy), a non-invasive three-dimensional optoelectronic detection system that allows an accurate assessment of spine alignment combined with a stabilometric platform. Participants stood barefoot on the stabilometric platform, in a quiet erect stance, with the uncovered back facing the Spine 3D.

Results

	Group	T0	T1	P-value
EE	BF	0.29 ± 0.99	0.51 ± 0.26	0.312
	SV	0.51 ± 0.25	0.57 ± 0.29	
	AE	0.43 ± 0.23	0.57 ± 0.19	
Sway X	BF	20.60 ± 9.62	14.05 ± 5.04	0.003*
	SV	8.62 ± 1.52	11.38 ± 3.94	
	AE	14.87 ± 5.71	18.45 ± 4.62	
Sway Y	BF	19.19 ± 9.46	13.69 ± 7.00	<.001*
	SV	8.33 ± 3.21	11.35 ± 3.14	
	AE	19.10 ± 11.13	22.65 ± 10.12	
SE	BF	396.61 ± 277.55	196.04 ± 87.86	<.001*
	SV	52.92 ± 24.59	138.67 ± 91.11	
	AE	188.95 ± 120.39	201.82 ± 113.50	
RMS	BF	5.33 ± 1.12	3.78 ± 1.56	0.640
	SV	5.78 ± 1.86	4.44 ± 1.94	
	AE	4.67 ± 1.87	5.44 ± 1.13	

Notes: EE, eccentricity of the ellipse; Sway X, center of pressure medio-lateral; Sway Y, center of pressure antero-posterior; SE, surface of the ellipse; RMS, root mean square of the vertebral deviation from the ideal line. Values are expressed as mean and standard deviation; significance was set for $p \leq 0.05^*$.

A session of core perception and activation exercises, supported by Visual Biofeedback, could reduce the postural sequelae acutely caused by LIF.

Conclusion

According to the literature SV results shows that, in acute, after a supervised session of perception and activation core exercises, Spine alignment improve and Balance gets worse. BF results suggest that the use of the stabilometric platform prevent the Balance worsening. Conversely AE is not useful.