



Marfan Syndrome, It Doesn't Have to be a Pain in the Back

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PURPOSE:

Marfan syndrome is one of the most common connective tissue disorders with variable expression, affecting 1 in 5,000 people.¹⁻⁶ More than 80% of individuals with Marfan syndrome will have some sort of structural abnormality within their cardiovascular system, requiring constant monitoring and eventual surgical intervention.^{3,6-8} Scoliosis is also common, affecting 60% of those with Marfan syndrome, but physical therapy is rarely utilized in treatment.^{1,3,6}

The purpose of this study is to describe a rehabilitation program for low back pain in an individual with Marfan syndrome and surgical history of aortic root repair with mechanical aortic valve replacement (AVR) and Harrington rod placement to correct spinal scoliosis.

CASE DESCRIPTION:

The patient was a 20-year-old male with Marfan syndrome who presented to physical therapy with generalized low back pain. His surgical history included the placement of Harrington rods for the correction of thoracic scoliosis and heart surgery for the placement of a mechanical AVR and aortic root repair. The patient participated in seven weeks of skilled physical therapy that focused on manual physical therapy, therapeutic exercise, and postural realignment. Outcome measures utilized included the Oswestry Back Disability Index (ODI) and the Scoliosis Research Society (SRS) Outcomes Instrument: Version 30.



Picture 1: Anterior and posterior view of 20-year-old male with Marfan syndrome

METHODS:

		INTERVENTIONS		
Intervention		Weeks 1-2	Weeks 3-6	Week 7
Manual Techniques	Soft Tissue Mobilization	Quadratus lumborum, thoracolumbar paraspinals	Quadratus lumborum, thoracolumbar paraspinals, right periscapular muscles	Right thoracolumbar paraspinals, Right periscapular muscles
	Trigger Point Release	Quadratus Lumborum, Paraspinals	Quadratus Lumborum, Paraspinals	-
Modalities	Moist Hot Pack	With therapeutic exercise and activity	-	-
Therapeutic Exercise	Gluteal Sets	x 20	2 x 10 x 5s hold	-
	Abdominal Bracing	x 20	2 x 10 x 5s hold	2 x 20 x 5s hold
	Upper Body Ergometer	x 5 min	x 8 min	x 10 min
	Heel Raise	2 x 10 small ROM	-	-
	Bridging	2 x 10	2 x 10	2 x 15
	Clamshells	2 x 10	2 x 10	2 x 10
	Foam Roll Sequence	x 10	-	-
	S/L Open-Book	2 x 10	-	-
	Supine Marching	-	2 x 10	2 x 10
	Supine Shoulder Horizontal Abd	-	2 x 10 RTB	-
	Low Rows	-	2 x 10 YTB → RTB Towel roll under left foot	2 x 10 RTB Towel roll under left foot
	Standing Shoulder Flexion and Extension	-	2 x 10 RTB Towel roll under left foot	2 x 10 RTB Towel roll under left foot
	Therapeutic Activity	Sit-to-Stand	x 30	x 30
	Walking with left foot on 1x4 plank	-	-	8 laps
Patient Education	Activity Modification	Bed mobility, avoid excessive bending, sitting posture, sleeping posture, heat for pain control	Standing posture with towel roll under left foot, sitting posture with towel roll under left ischial tuberosity	Trunk alignment when walking, minimize lateral sway

Abbreviations: x: times, s: seconds, min: minutes, S/L: Side-Lying, ROM: Range of Motion, Abd: Abduction, YTB: Yellow Theraband, RTB: Red Theraband



Picture 2: side-lying open-book exercise



Picture 3: foam roll sequence

RESULTS:

EXAMINATION DATA AND OUTCOMES				
		Initial Evaluation (Session 1)	Re-Evaluation (Session 9)	Change
AROM	Lumbar Flexion	Fingertips to ankle, pain in low left low back, straight due to Harrington rods	Fingertips to ankle, pain in low back, straight due to Harrington rods	No change
MMT	Gluteus Medius	Bilateral 3/5	Bilateral 3+/5	Increase by half a muscle grade
Functional Tests	Sit-to-Stand	Decreased concentric control	Improved control, mild pain in low back	Improved muscular control
	Single Leg Heel Raise	Increased tension and pain in back, Left weaker than right	Double Leg Heel Raise small range, pressure in low back Single Leg Heel Raise minimal clearance	Improved muscular control
	Half Kneel	Difficult due to lower extremity weakness	Able to perform	Improved muscular control
	Bridging	Posterior pelvic tilt, painful	Good control, no pain	Improved muscular control
Outcome Measure	ODI	24/50 = 48% Disability	19/50 = 38% Disability	5 points or 10% improvement

*ODI MCID between 4 and 10.5 points⁹

CONCLUSION:

At the time of re-evaluation, the patient reported decreased pain and improved muscular control with functional activities. The patient was seen for ten sessions before discontinuing physical therapy due to time constraints of a new job. As a whole, the patient exhibited improvement in his overall function with the combined treatment interventions.

Due to the musculoskeletal involvement of Marfan syndrome, it is imperative for physical therapists to become involved in the care of those individuals affected, as physical therapists commonly treat a variety of conditions and impairments, including strains, joint laxities, and scoliosis.^{3,10}

For references scan here:

