Treatment of Acute Torticollis Using Positional Release Therapy: Part 2

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Positional Release Therapy (PRT) is a term for a specific approach to detection, classification, and treatment of trigger/tender points in the cervical musculature.[1] A position of comfort (POC) is held for a short period of time, typically 90 seconds, to facilitate restoration of normal tissue tension.[1-3] We define a TP as a tender region within muscle, tendon, ligament, fascia, or bone that is four times more sensitive than the surrounding tissue or within the same tissue on the contralateral side. All TPs referenced in this report are designated according to system originated by D'Ambrogio and Roth.[1]

The purpose of this case series investigation was to assess the effectiveness of PRT for treatment of acute muscular torticollis. Questions included the following: (a) Do patients with acute muscular torticollis present with TPs? (b) Does PRT treatment effectively decrease tenderness to palpation measured by the Numerical Rating Scale (NRS)? (c) Does PRT decrease the level of disablement in our patients as measured by the NRS, goniometric Active Range of Motion (AROM), and the Disablement in the Physically Active (DPA) scale? We documented the outcomes of four consecutive patients who were diagnosed with acute torticollis and were treated with PRT.

Key Point

- Positional Release Therapy can quickly restore full function in disease-oriented as well as patient-oriented outcome measures.
- Positional Release Therapy can restore full function from acute muscular torticollis in 2–3 treatments of 5 minute therapy.
- Positional Release Therapy can produce clinically significant improvement that is maintained with return to physical activity.
- A modified Positional Release Therapy evaluation can be easily incorporated into a "standard" physical examination.

Case Descriptions

History

A summary of each patient's history is provided in Table 1. Three were student-athletes and one was a staff athletic trainer. Each of the patients denied a history of spinal trauma or significant previous cervical pathology. Passive range of motion, neurological, and orthopedic special test results were unremarkable for each patient. Patients would have been excluded if they exhibited vertebral artery insufficiency, had a previous history of cervical vascular dysfunction, or experienced symptoms associated with atlantoaxial rotatory subluxation. All patients were examined by the same clinician, and each provided written consent for participation.

Patient #1 awakened to symptoms of neck stiffness following a typical day of sport practice and conditioning activities.

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Table 1. Patient Histories				
Patient	Age (Years)	Sex	Time Since Onset	Occupation / Activity
1	21	Female	7 hours	Student / collegiate swimmer
2	19	Female	8 hours	Student / collegiate swimmer
3	19	Female	28 hours	Student / collegiate soccer player
4	30	Male	7 days	Athletic trainer

After morning classes, she reported to the clinic in the afternoon. Clinical evaluation revealed symptoms on the left side. She rated her pain on the NRS as 4 at rest and 8 with movement. During a PRT evaluation, the patient exhibited TP "jump signs" in Obliquus Capitis Superior: Posterior First Cervical – Extension (PC1-E) and Paraspinals: Posterior Third Cervical (PC3), with significant TP pain (8/10) at the Trapezius (TRA). AROM was 36˚ in cervical flexion, 36˚ in left cervical rotation, and 68˚ in right cervical rotation. The patient reported an initial score of 44 on the DPA scale.

Patient #2 awakened to symptoms of neck stiffness following a typical day of sport practice and conditioning activities. After morning classes, she reported to the clinic in the afternoon. Clinical evaluation revealed symptoms on her left side. She rated her pain on the NRS as 5 at rest and 8 with movement. During a PRT evaluation, the patient exhibited TP "jump signs" at PC1-E and Posterior Fourth Cervical (PC4), with significant TP pain (8/10) at the TRA. AROM was 46˚ in cervical flexion, 38˚ in left cervical rotation, and 62˚ in right cervical rotation. The patient reported an initial score of 51 on the DPA scale.

Patient #3 awakened to symptoms of neck stiffness following a typical day of off-season weight-lifting activities. She had experienced similar symptoms following weight-lifting activities two weeks earlier that had not completely resolved. Clinical evaluation revealed symptoms on her right side. She rated her pain on the NRS as a 1 at rest and 6 with movement. During a PRT evaluation, the patient reported moderate TP pain at PC1-E (4/10) and mild TP pain (2/10) at the Posterior Third Cervical (PC3) and TRA. AROM was 54˚ in cervical flexion, 60˚ in left cervical rotation, and 55˚ in right cervical rotation. The patient reported an initial score of 28 on the DPA scale.

Patient #4 awakened to symptoms of neck stiffness after taking a nap on a non-work day. He sought treatment 4 days later from a clinician who administered cervical joint mobilizations, massage, high-velocity low-amplitude thrusts, and stretching exercises. He reported that the treatments improved his symptoms, but they did not completely resolve. Following 3 more days of persistent symptoms, he reported to our clinic for treatment. Clinical evaluation revealed symptoms on his right side. He rated his pain on the NRS as a 0 at rest and 2 with movement. During a PRT evaluation, he reported moderate TP pain at PC1-E (4/10) and mild TP pain (2/10) at the Posterior Third Cervical (PC3) and TRA. AROM was 31˚ in cervical flexion, 58˚ in left cervical rotation, and 41˚ in right cervical rotation. The patient reported an initial score of 12 on the DPA scale.

Examination

All AROM measurements were obtained from a goniometer marked in 1º increments.[4-6] The same clinician obtained all AROM measurements for a given patient and a different clinician administered PRT. Three AROM measurements were averaged for both of the following procedures:

- Flexion: Patient seated on a stool and instructed to maintain proper posture. The axis of rotation was centered over the external auditory meatus. The movement arm was positioned parallel to the base of the nasal openings. The stationary arm was perpendicular to the floor.[7]
- Rotation: Patient seated on a stool and instructed to maintain posture. The axis of rotation was centered over the top of the patient's head. The movement arm was positioned to bisect the patient's nose. The stationary arm was aligned to bisect the patient's acromion process.[7]

Intervention

PRT was administered to all four patients by the same clinician. Each patient received one PRT treatment

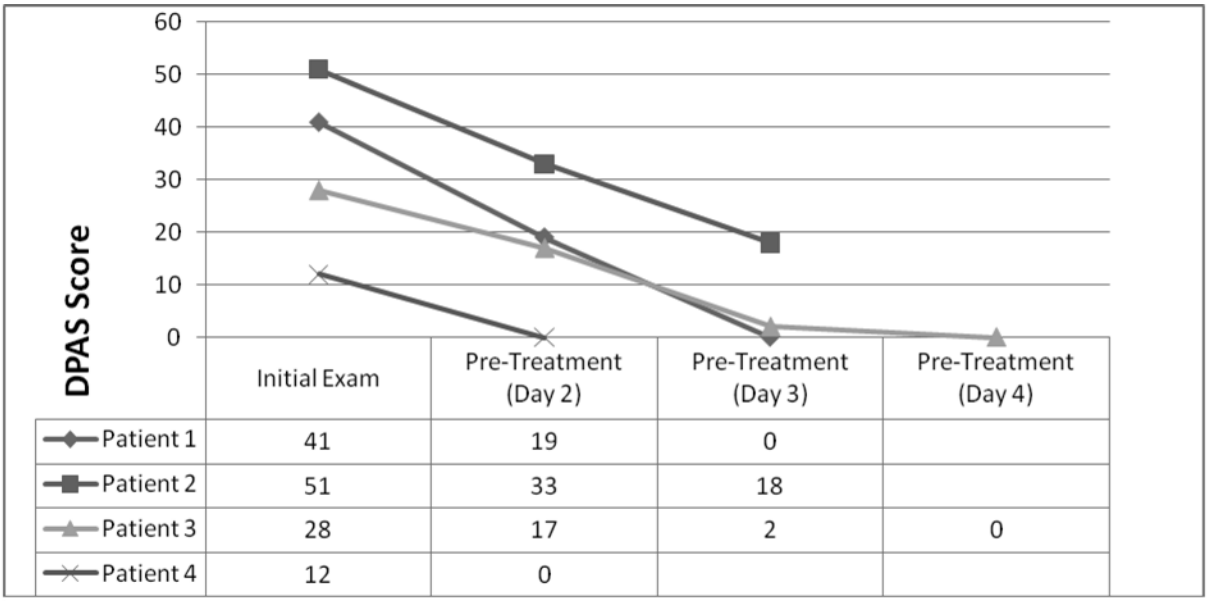
session per day until symptoms resolved. Each of the three TPs identified during examination was treated with PRT for 90 seconds per treatment session. The PRT treatments began with the most severe TP and moved to the least severe TP for each patient (e.g., PC1-E to PC3/4 to TRA). AROM was measured and NRS scores were obtained before and after each treatment session. The DPA scale was first completed by the patient at the initial examination and at the beginning of each treatment session on the subsequent days. The patients were instructed not to perform any additional treatments (e.g., stretching, ice). Following each PRT session, the patient was allowed to return to normal activity without any participation restriction. Patients were discharged when asymptomatic during physical examination, AROM had returned to normal, and the DPA score had normalized.

Results

Following initial treatment, all patients exhibited a minimal clinically important difference (MCID) on the DPA scale (9 points[8]) and the NRS (2 points[9,10]) for pain with motion and pain with TP palpation (Table 2; Figures 1–4).[8-10] Three of the four patients returned to normal AROM for flexion and rotation (in both directions) after the first treatment (Tables 3–5). By the end of two treatment sessions, all four patients had achieved treatment goals for AROM (Table 6).[7] Three of the four patients experienced complete resolution of pain with motion and palpation on the second day (Figures 2-4). Three of the patients were discharged on day 3. One patient received an additional treatment. Collectively, the four patients improved AROM in flexion by an average of 30.5°, rotation toward the location

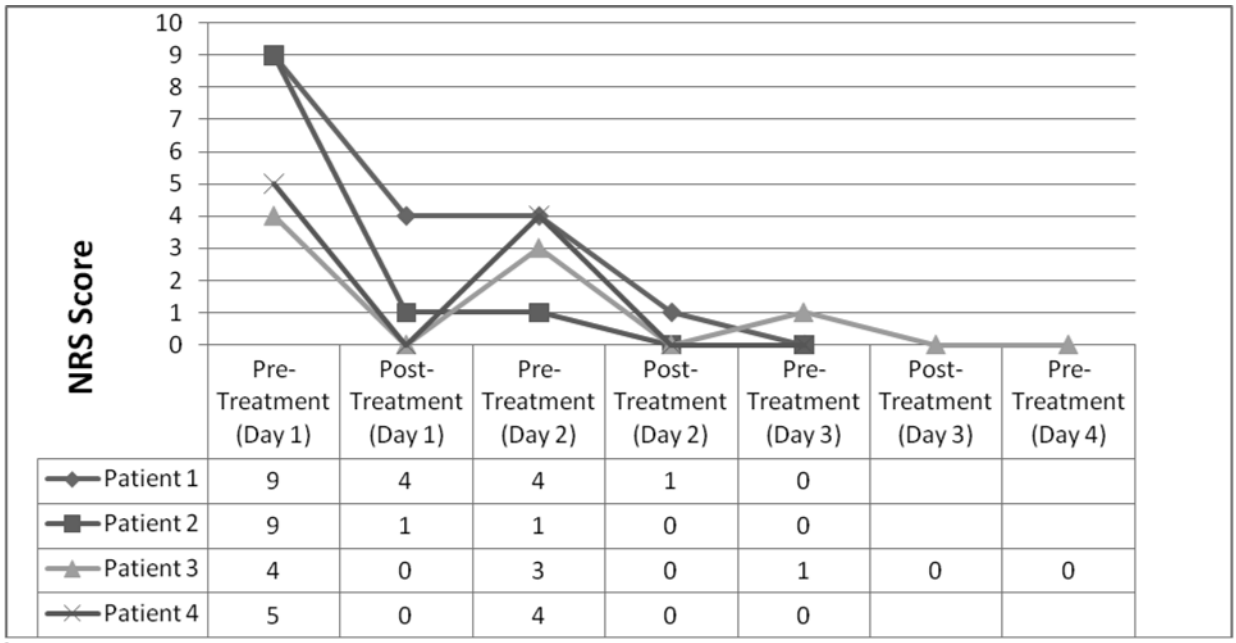
Table 2. Pain During Most Difficult Cervical Motion on Numerical Rating Scale[A]

Patient	Day One			Day Two			Day Three			Discharge
	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	NRS
1	8	4	4	2	0	2	NA	NA	NA	0
2	8	1	7	1	0	1	NA	NA	NA	0
3	6	4	2	4	1	3	1	0	1	0
4	2	0	2	0	0	0	NA	NA	NA	0



[a]A change of 9 points represents a Minimal Clinically Important Difference.

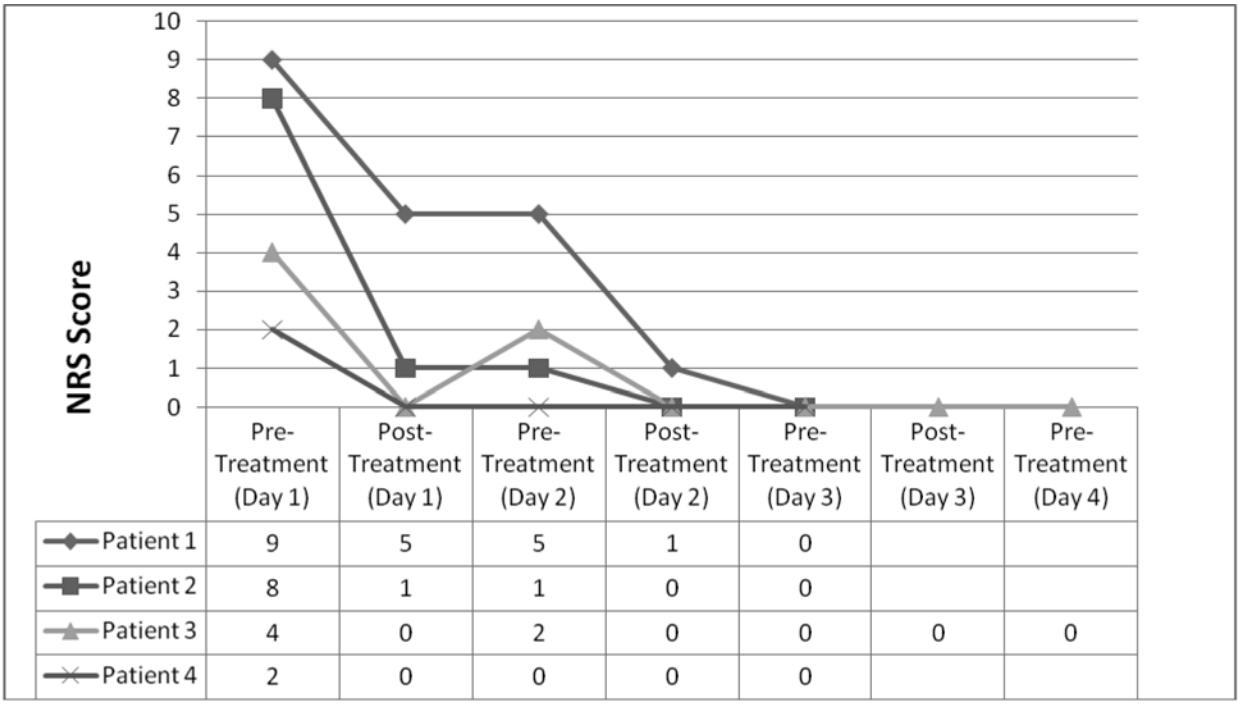
Figure 1 Changes in the Disablement in Physically Active Scale[a].



	Pre-Treatment (Day 1)	Post-Treatment (Day 1)	Pre-Treatment (Day 2)	Post-Treatment (Day 2)	Pre-Treatment (Day 3)	Post-Treatment (Day 3)	Pre-Treatment (Day 4)
Patient 1	9	4	4	1	0		
Patient 2	9	1	1	0	0		
Patient 3	4	0	3	0	1	0	0
Patient 4	5	0	4	0	0		

[a]A 30% decrease or a change of 2 points represents a minimal clinically important difference.

Figure 2 Changes in NRS score for tender point palpation of PCE-1[a].



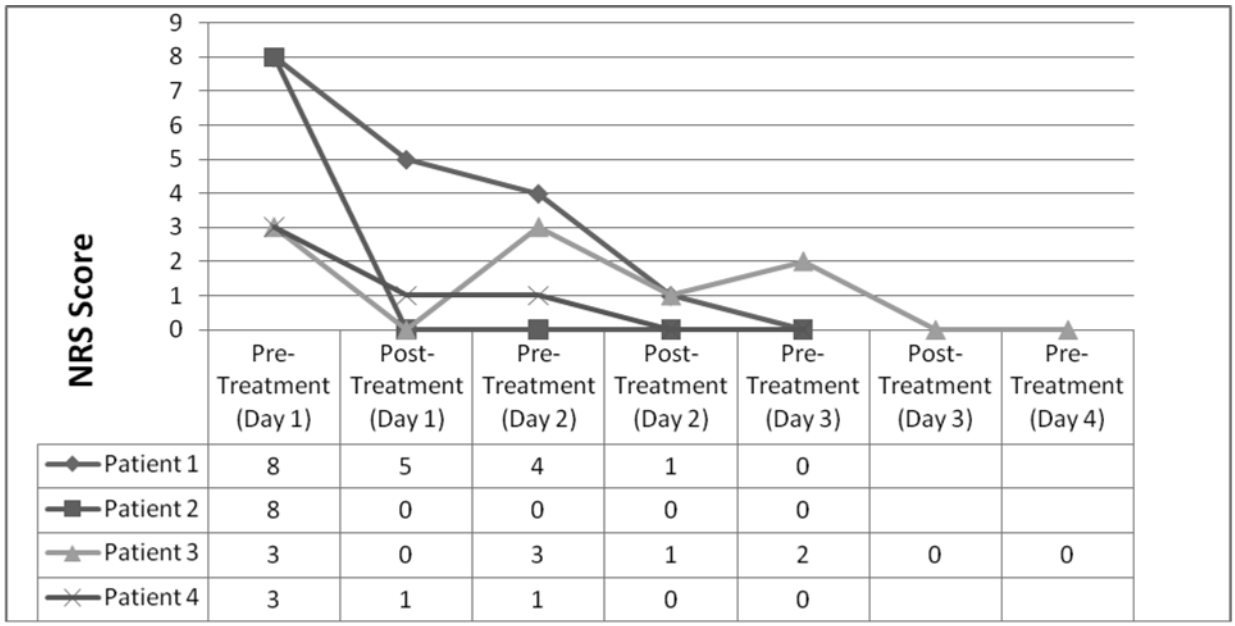
	Pre-Treatment (Day 1)	Post-Treatment (Day 1)	Pre-Treatment (Day 2)	Post-Treatment (Day 2)	Pre-Treatment (Day 3)	Post-Treatment (Day 3)	Pre-Treatment (Day 4)
Patient 1	9	5	5	1	0		
Patient 2	8	1	1	0	0		
Patient 3	4	0	2	0	0	0	0
Patient 4	2	0	0	0	0		

[a]: A 30% decrease or a change of 2 points represents a minimal clinically important difference.

Figure 3 Changes in NRS score for tender point palpation of PC3/PC4[a].

of pain by an average 39° and rotation away from the location of pain by an average of 28.5° (Table 6).

The average change in NRS and DPA scores were much greater than necessary to demonstrate MCID.[8-10] Only one patient had a suboptimal DPA rating at discharge, which related to well-being. The patient indicated that the cervical symptoms had completely resolved and that the DPA rating related to elevated stress and anxiety. Follow-up examinations at one week and at one-month postdischarge



[a]A 30% decrease or a change of 2 points represents a minimal clinically important difference.

Figure 4 Changes in NRS score for tender point palpation of TRA[a].

Table 3. Increase in Active Flexion (Degrees)

Patient	Day One			Day Two			Day Three			Discharge
	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	ROM
1	36	66	30	68	78	10	NA	NA	NA	78
2	46	67	21	70	80	10	NA	NA	NA	80
3	54	64	10	64	68	4	68	69	1	69
4	31	42	11	40	62	22	NA	NA	NA	62

Table 4. Increase in Active Rotation (Degrees) Toward Side of Pain

Patient	Day One			Day Two			Day Three			Discharge
	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	ROM
1	34	82	48	82	88	6	NA	NA	NA	90
2	38	83	45	83	90	7	NA	NA	NA	90
3	55	73	18	72	87	15	85	85	0	85
4	58	68	10	65	78	13	NA	NA	NA	78

Table 5. Increase in Active Rotation (Degrees)Away in From Side of Pain

Patient	Day One			Day Two			Day Three			Discharge
	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	Pre-PRT	Post-PRT	Change	ROM
1	68	88	20	86	90	4	NA	NA	NA	90
2	62	86	24	84	90	6	NA	NA	NA	90
3	60	71	11	72	87	15	87	87	0	87
4	41	57	16	61	77	16	NA	NA	NA	78

Table 6. AROM (Degrees)							
		Flexion		Rotation Toward Location of Pain		Rotation Away From Location of Pain	
Patient	Number of Visits	Initial	Discharge	Initial	Discharge	Initial	Discharge
1	2	36	78	34	90	68	90
2	2	46	80	38	90	62	90
3	3	54	69	55	85	60	87
4	2	31	62	58	78	41	78

confirmed maintenance of normal function for all four patients.

Discussion

Improved AROM, resolution of pain, and improvements in scores that exceeded MCID for the NRS and DPA scales for all four patients suggest that PRT is an effective intervention for patients who present with cervical TPs. All improvements in status were maintained from one treatment session to the next, and at one month following discharge from treatment.

Limitations

The primary limitation of this case series is the lack of a comparison group of patients with a similar clinical presentation to those who received PRT, which is essential to confirm that the therapeutic benefit exceeds the amount of improvement associated with other interventions or that which naturally occurs with the passage of time. Additional research is needed to determine the true effectiveness of this approach to treatment of acute torticollis. Furthermore, maintaining the position of comfort for a longer period, using repeated TP treatments, or administering multiple PRT sessions per day may produce a better outcome.

Conclusion

For the reported case series, the administration of PRT was associated with a clinically significant improvement in patient status. Restoration of AROM, pain reduction, and improved function allowed each of the four patients to immediately return to unrestricted sport practice and conditioning activities without adverse consequences. Although our findings suggest that PRT is effective, research is needed to establish the physiologic basis of the apparent therapeutic benefit.

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