Asia-Pacific Chiropractic Journal

Sacro Occipital Technique (SOT): Category Three: Predictability of Outcomes

Harvey Getzoff

Narrative: DeJarnette was a researcher, author, teacher and developer of the SOT systems method of Chiropractic. DeJarnette stated in his 1967 book Philosophy, Science and Art of SOT that:

'*Man is a segmental unit of a great many diversified structures and chemical elements, blended into one co-operative functional unit by the nervous system. This total segmental being is made to function through his muscular system's response to stimuli. The framework is held together by ligaments, and all revolve around the central spinal column. Let this central column fail in any respect and the total is out of harmony and balance*'.

Here I describe the pain and spinal patterns that clinically indicate an SOT Category Three and offer treatment approaches which I have found effective in practice to deliver predictable outcomes.

Indexing Terms: Sacro Occipital Technique, SOT; Chiropractic; SOT Category three; Piriformis muscle; Sciatica; Lumbar disc.

Introduction

Patient pain patterns along with spinal patterns in conjunction with the SOT *Step Out Toe Out* (SOTO) (manoeuvre and adjustment) and the *Straight Leg Raise Test* (SLR) can be effective in making accurate judgements regarding diagnosis, the severity of the diagnosis and the prognosis of lower back and accompanying (buttock and leg) sciatic nerve pain.

'... An SOT Category Three has specific pain and spinal patterns which can be effectively treated with simple, direct treatment approaches described here ...'

These patterns, tests and observations can also be effective in establishing and communicating a successful treatment plan.

Sciatic nerve pain, and spinal inclines along with SOTO findings are indicators (5) of the need for a SOT category three adjustment. The three SOT Categories consist of three primary systems of the body, centred on the function of the Central Nervous system, its attachments and structural stability throughout the entire body. (17) Category three addresses lumbar subluxations, lumbar disc lesions, the condition of the sciatic nerve (17) and compensatory responses in the piriformis muscle.

Essentially, pain patterns can be gathered in the initial patient history and reviewed at each subsequent office visit. Spinal lean/curve can be judged initially and for improvement also at each subsequent office visit. Additionally, the SOTO manoeuvre/adjustment and SLR testing can elicit both pain patterns and diagnostic evidence that give more detail to both the diagnosis and prognosis of the lumbar spine and its related disc tissue. (9) SLR testing can also be used to judge the effectiveness of the Sitting Disc Technique (SDT), (13) the primary SOT lumbar adjusting method.

Pain Patterns/Spinal Patterns

The patient's history should reveal not only the exact site of pain in the lower back, buttocks and leg but the frequency, the onset, the causes of the onset and any occurrence that could be relative to the pain (lying down, sitting, walking, sleeping etc.).

Spinal patterns should be noted with the patient standing on a fixed footplate with a plumb line descending through lumbar 4 and 5 spinous processes. Evaluate the lumbar spine for leaning, curving and for any deviation from the plumb line. Pain patterns along with spinal patterns present the initial diagnosis for the severity of the disc lesion. (Table 1)

Table 1: Presentations

Scenario	Diagnosis	Prognosis
#1: Lumbar spinal lean or curvature to the opposite side of the pain.	Bulging disc (Lateral disc)	Favorable, should respond to care.
#2: Lumbar spinal lean or curvature to the same side of the pain	Herniated disc (Medial disc)	Guarded, limited response to care

Persistent unilateral calf pain scenario #3 (Table #3), the primary diagnosis most often is a fragmented disc. Repeated SOTO adjusting (the SOTO manoeuvre on the category three blocks) in most cases does not alter the level of pain. SOTO adjusting of scenario #1 will most often reduce the radiating pain as well as reducing the restriction in performing the SOTO manoeuvre. (Table #2) DeJarnette DC writes 'A left sciatica with a right spinal incline will respond without complications to a category 3 procedure. (3, 4) SOTO adjusting of scenario #2 at times can reduce the pain level but most often does not exhibit any significant symptomatic change. (Table #2) DeJarnette writes '*that sciatica on the side of incline is always a serious challenge due to the probability of a disc or nucleus involvement*'. (3, 4)

Table 2: Scenarios

Scenario	SOTO on the blocks
#1	Improves both the pain and restriction when performing SOTO.
#2	Most often no change or limited improvement when performing SOTO.

The Soto Manoeuvre

The SOTO manoeuvre is accomplished by grasping the knee of the prone patient with one hand and the ankle with the other hand. Abduct the patient's leg slowly until the hip on that side begins to elevate from the table and/or resistance is met.

Then externally rotate and dorsiflex the foot making sure that the foot is at the same level as the pelvis. Unilateral restriction and/or provocations of pain is an indication for the need for block placement. '*The blocks are placed according to the short/long leg. The block on the short leg side is placed under the acetabulum pointing obliquely down to the other side. The block on the long leg side is placed under the ASIS also facing obliquely downward to the other side*'. (3)

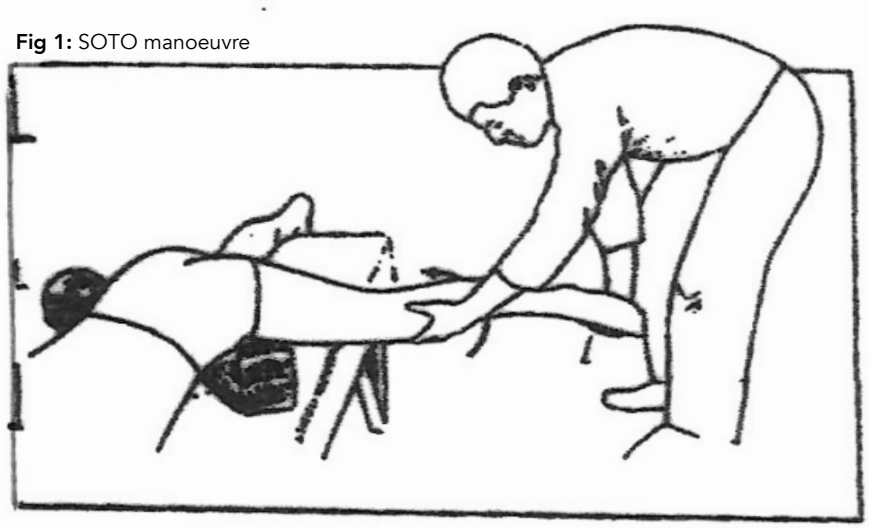


Fig 1: SOTO manoeuvre

SOTO

SOTO without category three blocks in place is a diagnostic test. SOTO with the Category three blocks in place is an adjustment while further defining the diagnosis.

Piriformis Muscle

The *piriformis* muscle passes from the lateral surface of the sacrum to the greater sciatic foramen, from there ultimately inserting into the greater trochanter. Passing through the greater sciatic foramen can be of great clinical significance, since the *piriformis* is in close proximity to the sciatic nerve. '*The function of the piriformis is to laterally rotate the thigh*'. (1)

The *piriformis* muscle is important in posture, and it tends to elongate in order to stabilise the pelvis in the presence of a lumbar disc lesion. DeJarnette writes '*the piriformis muscle externally rotates the femur to aid posture*'. (3, 4) '*The piriformis muscle can even cause neural symptoms as a result of its anatomical proximity to the sciatic nerve. These symptoms are difficult to differentiate from a discogenic radicular condition*'. (1)

DeJarnette states '*That the SOTO is given to shorten the piriformis muscle so the Sacro sciatic notch can be liberated from pressure upon the sciatic nerve*'. (3, 4) DeJarnette further states '*that if*

the elongation of the piriformis muscle is the causative factor of the patient's sciatic nerve pain the SOTO adjustment will be successful in minimising and/or eliminating the pain. The objective of the SOTO is to roll the leg in such a manner as to shorten the piriformis muscle thus elevating the muscle and freeing the sciatic nerve'. (3, 4)

Dr. Remeta DC, in her MRI study of the accuracy of the SOTO states the following.

> *'The SOTO manoeuvre is purported to help differentiate between lumber disc lesions from piriformis muscle syndrome. Additionally, the SOTO manoeuvre is also used to assist diagnosis into the type and severity of the disc legion. Positive SOTO manoeuvre for piriformis muscle syndrome is determined by elimination of the radiating pain after the first time the manoeuvre is performed. Disc findings, on the other hand, were associated with reports of no change or worsening of the patients' symptomatology, after the first manoeuvre. For these patients the manoeuvre was performed in two additional and one-minute intervals. Findings of same, same, better or same, better, better offered a good prognosis following SOT category three chiropractic conservative care'.* (10)
>
> *'Findings of increased pain on second and third attempts of the manoeuvre was indicative of disc fragmentation and high probability necessitating surgical intervention. A clinical study was performed to test the diagnostic accuracy of the SOTO manoeuvre in patients with lumbar disc legions. The study was accomplished by comparing the initial examination SOTO indicators and results of MRI. A high degree of accuracy was observed in being able to differentiate a disc bulge versus disc herniation via the SOTO manoeuvre as supported by MRI'. (10)*

Table 3: Decision matrix

Scenario, plumb line	Possible Symptoms	SOTO-no blocks	Initial diagnosis	SOTO-on blocks	Subsequent SOTO-on blocks	Prognosis
#1: Lean away, from side of pain	Pain-low back possibly buttocks, upper leg	Probable unilateral restriction.	Bulging disc, lateral disc.	Improvement of symptoms and motion.	Further improvement	Favorable, should improve with care
#2: Lean to the side of pain	Pain-low back possibly buttocks, entire leg	Probable unilateral restriction, increased pain	Herniated disc, medial disc.	Possibly-no change	Still-no change	Guarded, possibly some improvement
#3: Lean most often is-away from the side of pain	Pain possibly low back probably buttocks upper leg	Probable unilateral restriction.	Piriformis Syndrome.	Improvement of symptoms and motion.	Further improvement	Favorable should improve with care.
#4: Lean Varies	Possible only severe calf pain	Probable unilateral restriction, Increased pain	Fragmented disc.	Possibly-no change-or worsening.	Possibly-no change-or worsening	Probable surgical intervention
#5: Lean varies	Lower back pain	Probable unilateral restriction	Disc lesion without radicular pain	Probable improvement of motion	Further improvement of motion	Favorable should improve with care

Discussion

Can two of the scenarios occur at the same time?

Yes, frequently scenarios #1 and #3 [table #3 scenario #5) occur simultaneously. An example of this would be as follows.

- Bulging disc on the right side of Lumbar #4
- Spinal lean to the left side of the plumb line
- The piriformis muscle elongates (compensates) in an attempt to recapture balance and maintain structural stability in the presence of the spinal lean
- As a result of the piriformis muscle's close proximity to the sciatic nerve at the sacral notch scenario #3 could occur
- The SOTO adjustment shortens the piriformis reducing the pressure on the sciatic nerve.

The subsequent adjustment of lumbar #4 (SOT Sitting Disc Technique (SDT) (8, 13) can not only reduce the pressure on the disc tissue lessening the lean/bulge but at the same time it can reduce and/or prevent the piriformis from compensating. (3, 4)

Can a patient have lower back pain from a lumbar disc problem and have no radicular pain?

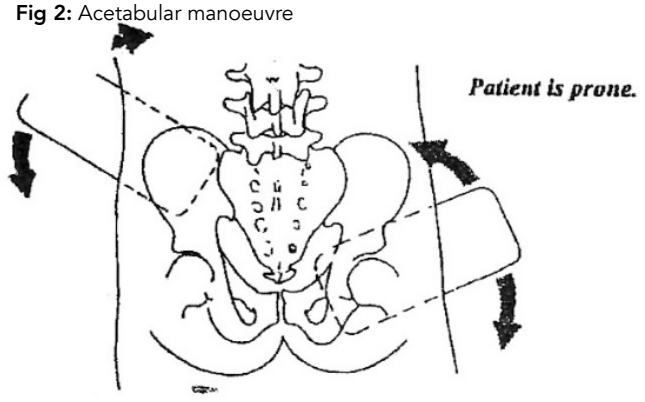
Yes, there are patients with lower back pain with indicators that the lumbar spine is involved (lean/curve and SLR restriction improved with SDT) (8, 13) and that the piriformis muscle (SOTO unilateral restriction) is also involved but do not have any radicular pain. Leading to the conclusion that even though there is involvement of the lumbar discs and the piriformis muscle they are not significantly affecting the sciatic nerve. (Table #3, Scenario #5)

Acetabular adjustment

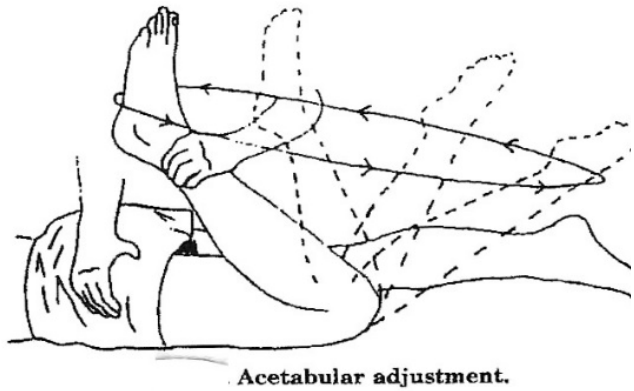
As a precursor to the SOTO manoeuvre and block placement for the SOTO adjustment the acetabulum (hip joint, ilium femoral joint) is analysed and if necessary adjusted.

- With the patient in a prone position grasp the patient's feet so that you can rotate the feet laterally, away from the midline
- In the course of rotating the feet laterally you will meet resistance at the hip joint
- The hip (acetabulum) with the greatest resistance is the involved side
- The adjustment for the involved acetabulum is to stand to the side of the involved acetabulum and with the patient's knee bent grasp the patient's foot
- Place your thumb firmly to the involved hip. Bend the patient's knee, grasp the foot and rotate the foot in circles while firmly putting pressure with your thumb contact. This adjustment can be done by standing on the opposite side and using your fingers to goad the acetabulum (as per the attached picture).

Fig 2: Acetabular manoeuvre



. Category 3 blocking position for a right, short leg length.



Acetabular adjustment.

DeJarnette stated that '*A high percentage of all patients complaining of back hip and leg pain have a unilateral or bilateral acetabular femoral head fixation and that it is perhaps the most overlooked of all human distortions*'. (3, 4)

Category Three SOT Category Defining Indicators

- In a standing plumb-line analysis with the eyes closed there is limited movement, a possible antalgic lean and /or a possible spinal curvature
- In a standing position the first rib/first thoracic articulations lacks movement on forward head movement (flexion)
- There must be a leg length deficiency in the prone position
- The SOTO manoeuvre should have some finding consistent with the patient's symptoms and findings (increased pain, pain reduction or greater restriction unilaterally than the uninvolved side). (5)

Category Three Adjustment Protocol

- Acetabular adjustment
- Prone blocking
- SOTO
- Sitting disc technique (SDT)
- Psoas adjustment if indicated. (Appendix #1 and#2)

The Sitting Disc Technique (SDT)

- SDT is done with the patient sitting with the doctor sitting behind them
- The doctor contacts their thumb at the inferior tip of the spinous process of lumbar five.
- The patient then goes into flexion of the lumbar spine, pulling the abdomen in while arching the spine back (from lordosis to kyphosis)
- The doctor maintains a holding pressure in the anterior/superior direction throughout the patient's movement. Pain on contact is an indicator of the key vertebrae in need of adjustment
- Have the patient then return to the neutral position as the doctor releases the pressure. Repeat the process approximately 5 times on lumbar 3, 4 and 5
- Test the SLR prior to the SDT at each office visit looking for improvement.

SLR/SDT

'*Improvement of the SLR after the SDT adjustment and at each subsequent office visit is an indicator for a favourable and successful outcome*'. (13) (Table #4)

In a retrospective study I did titled *The Sitting Disc Technique (SDT) and the Relationship to the Straight Leg Raise (SLR)* (8, 13) the following was noted '*The SLR appeared to be a helpful method to monitor the functional improvement of the lumbar spine after successful SDT adjustments. The*

SLR also appeared to parallel positive symptomatic changes that accompanied lumbar spine improvement following the SDT applications'. (13) (Table #4)

Table 4: SDT

SLR pre SDT	SLR post SDT
Some difficulty and pain, lumbosacral area (Possible scenario #1)	Improvement both functionally and symptomatically. (Favorable outcome)
Difficult and painful, lumbosacral area and involved leg (Possible scenario #2)	Still difficult and painful with little or no improvement (Guarded outcome)

Disc technique (flexion).

Conclusion

To a large extent improvement of all indicators, after the adjustment and at subsequent office visits, supports the predictability of a favourable outcome.

- Severity and location of pain, history review.
- Spinal patterns on plumb line.
- SOTO off and on the blocks.
- SLR coupled with the SDT.
- Psoas testing via the arm pull.

None of the mentioned scenarios (Table #3) are absolute, some can be overlapping, all are from referenced sources, primarily Dr.DeJarnette, and 46 plus years of this writer's experience.

I believe that the information in this paper not only provides a method of effectively adjusting patient's experiencing lumbar disc and sciatic problems it is also helpful in predicting the outcomes of the Category three adjustments.

In addition to my experience, I practice what I consider to be an extremely careful and comprehensive method of record keeping and notes. (18)

As previously stated, the patterns, observations and tests expressed in this paper can also be effective in establishing and communicating a successful treatment plan.

SOT is a system method of Chiropractic that is intended to utilise an indicator system that allows for an ongoing process of patient analysis and an understanding of the patient's ability to have a successful outcome.

Harvey Getzoff
DC
Private Practice
Marlton, NJ, USA
harvgetz@hotmail.com

Cite: Getzoff H. Sacro Occipital Technique (SOT): Category Three: Predictability of Outcomes. Asia-Pac Chiropr J. 2024;4.3. apcj.net/Papers-Issue-4-3/#GetzoffSOTCat3

References

1. Dvorak J and Dvorak V. Manual Medicine Diagnosis; 1984 Thieme-Straton Inc. pg. 126.
2. Getzoff IH. Sacro Occipital Technique Categories: A Systems Method of Chiropractic; Journal Chiropractic Technique; May 1999,11, (2), 62-65.
3. DeJarnette MB. Sacro Occipital Technique 1984. Privately Published Nebraska City NB. 51,75,101,116-144.
4. DeJarnette MB. Sacro Occipital Technique 1980 Privately Published Nebraska City NB. 166-179, 319-329.
5. Getzoff IH. The SOT Indicator System with Additions: Pre and Post Adjustment Analysis: 2019 Sacro Occipital Research Conference Proceedings: San Jose Ca.2019 1-6.
6. DeJarnette MB. Cranial technique. Self-Published: Nebraska City, NB, 1979-80; 14.
7. DeJarnette MB. The Philosophy, Science and Art of Sacral Occipital Technique. Privately published Nebraska City, NB 1967.
8. Getzoff IH. Disc Technique: An Adjusting Procedure for any Lumbar Discogenic Syndrome. Journal Chiropractic Medicine. Fall 2003: 2(4); 142-144.
9. Getzoff IH. Step Out Toe Out Procedure: A Therapeutic and Diagnostic Procedure. Journal of Chiropractic Technique: May 1998 :10(3), 8-16.
10. Remeta EM, Indicators for Disc Herniation Supported by Magnetic Resonance Imaging (MRI). 9th Annual Clinical Meeting of the American Academy of Pain Management, Las Vegas, NV, Sept. 1998.
11. Getzoff IH. Disc Technique, Differential Diagnosis and Treatment Mythology: Two Case Reports. 2009 Sacral Occipital Technique Research Conference Proceedings: Las Vegas, NV 2009: 37-39.
12. Getzoff IH. Category Three: Predictability of Outcomes: A Case Series 2011 Sacral Occipital Technique Research Conference Proceedings: Nashville, TN. 2011: 58-64.
13. Getzoff IH. Sitting Disc Technique and the Relationship to The Straight Leg Raise Test. A Retrospective Case Series of Thirty Patients. Asia Pacific Chiropractic Journal; 1,2.
14. Heese N, Pfefer M, Wilson J, Agocs S, Berg J, Gilmore R. Forces Associated with Cervical Stairstep Technique. Journal Chiropractic Education. 2019 March; 33(1): 60.
15. Blum C, Kierstyn S. A Retrospective Pre and Post Assessment of Cervical Ranges of Motion in 32-Patients Following Cervical Stairstep Technique Intervention. Journal Chiropractic Education 22:36(1): 559.

16. Getzoff IH Sacral Occipital Technique Cervical Protocol: Analysis, Adjustment and Assessment: A Retrospective Case Series [n=48]. 2014 SOT Research Conference Proceedings. 94-99.
17. Getzoff IH. A Critical Approach for Learning the Operating Principles of Sacro Occipital Technique (SOT) Chiropractic: Asia Pacific Chiropractic Journal. 2023;3,4.
18. Getzoff IH. Sacro Occipital Technique: Chiropractic Recording System. 2018 Sacro Occipital Technique Research Conference proceedings.
19. Getzoff IH. SOT Procedures, Case Studies and Standard Orthopedic Testing: A Case Series, 2011 SOT Research Conference.

Appendix:

1. Psoas Muscle Test: The Doctor stands at the head of the table, the patient is lying supine. The patient's arms are pulled back equally and held parallel to the floor. Measure for the shorter side while watching for a greater lack of rib cage motion on the shorter side. Most often the involved side (shorter) is consistent with the side of the spinal lean or curvature. (3, 4, 8)
2. Psoas Muscle Adjustment: The patient remains in the supine position while the doctor stands on the opposite side of the involved psoas. Bend the patient's knee on the involved side while putting your hand on the bent knee. The doctor places their other hand onto the abdomen working the abdominal tissues superior, lateral and inferior against the motion of the opposing knee, feel for a release of tension. This adjustment along with improvements in the spine will reduce the arm length differential, balancing the psoas muscle . Releasing and stabilising the psoas is a positive sign for a successful outcome. (3, 4)
3. Stairstep (SS) analysis and adjustment: With the patient supine test for rotational range of motion (ROM) right and left and record. With the patient remaining supine place your hands to the lateral parts of the cranium (index and the middle finger above the ear, ring and little finger below the ear. Advance the head toward the feet keeping the forehead and the chin level. Work through areas of resistance. (3, 4, 16)
4. Figure 8 adjustment: Maintain the stairstep hand position with some pressure toward the feet. Position the head at the level of resistance when doing the SS. Draw the cranium laterally (ear towards the shoulder) while keeping the chin and forehead level, repeat to the opposite side. Then rotate the chin to the shoulder (keeping the chin and forehead level), repeat to the opposite side. Repeat and work through areas of resistance. At the completion of the stairstep and figure 8 retest the ROM and note difference. (3, 4, 16) DeJarnette writes that '*these particular cervical techniques combine analysis and correction*'. (3, 4)
5. Homecare: Homecare is based on one overriding principle, lumbar flexion postures and activities avoiding extension postures and activities. Exercises should adhere to the same principle (flexion no extension). Pelvic tilts and knee to chest exercises are advisable.
6. Categories one and two: Category one addresses the function of the Primary Cranial Sacral Respiratory Mechanism while Category two is a unilateral problem of the body to maintain weight- bearing function with the ligamentous weight- bearing portion of the sacroiliac joint primary. Which of the three categories most in need of adjustment is primarily determined by SOT indicators. (17)

7. Dr MB DeJarnette DC: DeJarnette was a researcher, author, teacher and developer of the SOT systems method of Chiropractic. Dr. DeJarnette stated in his 1967 book Philosophy, Science and Art of SOT the following …

> '*Man is a segmental unit of a great many diversified structures and chemical elements, blended into one co-operative functional unit by the nervous system. This total segmental being is made to function through his muscular system's response to stimuli. The framework is held together by ligaments, and all revolve around the central spinal column. Let this central column fail in any respect and the total is out of harmony and balance*'. [7]