

An Introduction to Spinal Reflex

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Recent interest in the health benefits of soft tissue therapeutics has greatly increased in both the healthcare and public sectors. This new interest puts pressure on the massage profession to redefine itself in a broadening world of inter-professional competition, cost containment and the client's need for improved outcomes. The growing demand to conclude the therapeutic session with measurable gains in the client's condition drives a growing need for new strategies in soft tissue management.

Through recent understanding that the root cause of most nerve, joint and muscle dysfunction lies within the axial spinal reflex, SPINAL REFLEX ANALYSIS brings new and exciting opportunities to the therapeutic experience.

A cascade of reactions

Our entire physical experience is overshadowed by a little known process that originates from within the human spine. Large changes in tissue physiology require a cascade of events to trigger a breakdown in function. If the cascade is extremely fast, we call it a trauma; if it is slow, we call it a process or illness. Regardless of the rate of change in homeostasis within the human body, there is typically a definitive trigger that sets off a cascade of ensuing changes. Much like a keystone of rock in the face of a cliff that dislodges and falls, more and larger reactions build on the way down. In therapeutic terms, a trauma or progressive process will form an expanding cascade of dysfunction through compensation,

accommodation, and adaptation. In client terms, it becomes a virtual landslide of functional problems and progressive pain.

Therapists and doctors are trained to clean up the mess at the bottom of the rock slide, i.e., the reactions. If we are effective in this process then the client departs with improved function and less pain and suffering.

As providers of care we are so often tempted to believe that the area of pain and discomfort is the focal point of the problem. Site specific focus in care is a premise that is frequently obsolete, misleading, impairs our understanding of the human body and encourages us to cling to old assumptions about function and dysfunction. As a result of this, we frequently miss the probability that most complaints are secondary reactions to a primary mechanism or process.

If a client injures a knee playing football, the damage to the knee may be evident. However, the knee may have been susceptible to injury if the axial skeleton is mismanaging the muscles controlling fatigue and balance in knee tracking while under load. If a client shows signs of rotator cuff injury but does not remember a mechanism of injury, it is highly probable that the axial skeleton is mismanaging joint tracking, resulting in fatigue, limited range of motion and eventual degenerative changes in muscles, tendons, ligaments and joints.

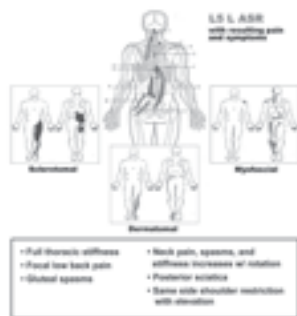
The axial skeleton or spine is a kinetic chain that functions as a floating lever for all other limbs and appendages to freely move from. If the chain or lever is strong and dynamically stable, motion is efficient and

pain-free. If the chain is weak or possesses focal instability(s), motion is inefficient and pain and dysfunction follows as the cascade of neuro-mechanical reactions progress. The epicentre or origin of this cascade is called a spondylogenic or axial spinal reflex. An active axial spinal reflex or ASR is the result of an unstable apophyseal or facet joint at a specific level and on a specific side of the spine. Instability in the spine is a global epidemic and is frequently driven by the lack of developmental strength associated with modern lifestyles: it only gets worse as we neglect to engage in adequate daily physical activity.

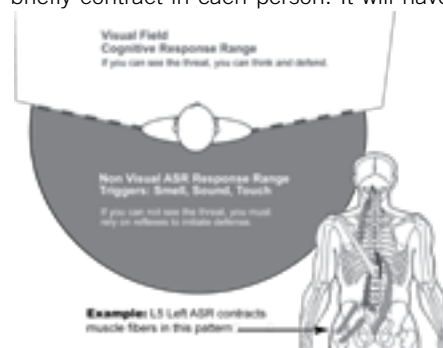
The Axial Spinal Reflex exposed

The Axial Spinal Reflex (ASR) is a new concept. It is fresh out of the box and has never been opened before. It is not a variation, a re-invention or a blending of various systems of assessment and techniques. Through understanding the ASR and its relevance to soft tissue dysfunction, the massage therapist is able to understand how the biomechanics of the spine can effect the nerves and soft tissue structures of the body, allowing them to directly and selectively change the status and outcome of the client.

The secret to this relationship is that a reflex is a reflex, is a reflex. As a physician, if I produce my reflex hammer and tap a patient on the patellar tendon, the quadriceps muscle will briefly contract. If I then take the hammer and tap the next one hundred people sitting in a row, the quadriceps will briefly contract in each person. It will have



Cascade of reactions



ASR response range

Analysis™

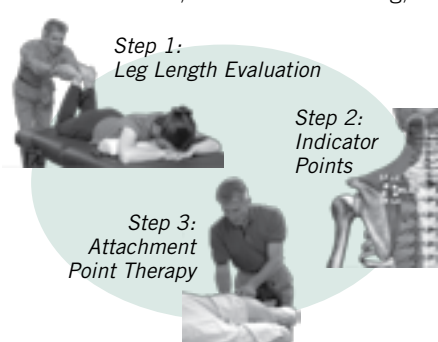
slight variations in intensity or speed, but again, a reflex is a reflex. If I have an active ASR originating from the facet articulation of the spinal segment C4 on the right side in one person, the next person with the same ASR findings will have the same shortened fibres within the same muscles of the neck, thorax, pelvis and extremities as the last person I assessed. They cannot be different because a reflex is hard wired into the nervous system.

ASRs are normal defence responses at their best. If an active ASR becomes chronic or stuck on, it will produce a pre-determined pattern of shortened muscle fibres within the core regions of the spine, 24 hours a day/ seven days a week, indefinitely and until turned off. Why would an ASR be a source of dysfunction if it is a normal defence process? Imagine as the doctor that I keep tapping your patellar tendon continuously so as to not allow your quadriceps to relax. What will happen to the muscle fibres? Will they fatigue? Will they develop trigger points from overload? Will they stress the tendon attachment to the bone? Will they offset tracking within the knee structure? Will they result in fibrosis and degenerative tendon, ligament and joint changes over time? Will the tight tendon produce oedema and tendonitis? And will you feel pain from various tissues at various stages of this process? Yes to all of this and more!

Because an ASR is a reflex, it is predictable. If you can identify the ASR, you can reduce it. If you reduce an active ASR, the body will function better and the client will feel less pain. An ASR is neither triggered, nor mediated by the client's brain. A person cannot feel an ASR, they can only feel the cascade of reactions that follow in the form of stiffness, tight muscles, restricted range of motion, joint problems, oedema, numbness, tingling, ache, burning, myofascial dysfunction, trigger point activation, referred and/or radiating pain, and weakness in muscles, tendons and joints.

Putting the keystone back

An ASR is a normal defensive withdraw reflex originating from the spine in response to an unseen or unheard stimulus that will dissipate on its own if the threat subsides without injury to the spine. An example of this reflex requires the reader to imagine sitting on the beach with friends on a hot summer day. One of your friends leaves for a moment and as he or she returns, without warning throws ice cold water on your back. You did not smell, hear or see it coming, but



SRA is a three-step process

the skin on your back felt the sudden cold, activated an ASR and contracted a large number of muscles in a specific and automated pattern that caused you to jump up and twist to push it away as you identified who or what threw the ice cold water on your back. You can (safely) poke a friend on the back of the neck and you will see the pattern of motion that is associated with the reflex originating from that level of the spine. Try it on another friend and you will see the similarity in their motions as well. This cord mediated action is very complicated and much faster than any brain can process.

Now imagine a facet joint is chronically unstable and the ASR is stuck on. In essence, the cascade of reactions starts with the unstable facet irritating nerves of the capsular ligament that feed directly into the spinal cord. These nerves activate or shorten pre-determined sets of muscle fibres throughout the 'core' of the body; the same fibres you will feel as taught or tonic when palpating your client. As these fibres compress various

other joints of the spine they will produce prolonged nerve root compression leading to sensory and motor nerve disruption. Larger muscle groups of the neck, torso and pelvis, and muscles of the extremities will shorten in response to this prolonged nerve root compression and facet instability. The resulting steady increase in tone followed by progressive fatigue in large muscle groups will produce an imbalance in the compartments that control joint tracking; further causing irritation, oedema, and wear to various tendons, ligaments and joints in the spine and extremities. The therapist is constantly palpating these taught fibres, oedematous and tender tissue, knots, myofascial trigger points and fibrotic tissue. Each of these is a progressive reaction produced by the continuous nerve activity of the ASR. In that the ASR produces extensive soft tissue reactions, the massage therapist is a key provider in addressing and managing the ASR as the most prevalent causative mechanism for soft tissue pain and dysfunction.

SRA Attachment Point Therapy (APT)

The soft tissue assessment and therapy used in the SRA System provides a rapid door into a fascinating process that affects so many people. We call it Attachment Point Therapy due to the pressure applied to the musculotendonous junction and toward the tendonous attachment of the origins and insertions near the bony surface of only the fibres produced by the ASR. The following information will briefly introduce you to this procedure.

Step 1: Leg Length Assessment

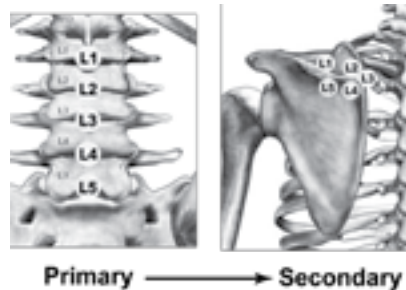
SRA assessment consists of viewing the client's relative or functional leg length while they are lying prone on the therapy table. Because the relative leg length is rarely due to variations in anatomical length between left and right, a functional difference will reflect torso and pelvic muscle influence originating from ASRs in the sacrum, low back, thorax or cervical spine. There are only four primary and three secondary leg length

patterns to learn.

This step takes 10-30 seconds to perform and will determine which side and region of the spine the ASR is located on.

Step 2: Indicator Point Assessment

The second step is to assess tenderness or temperature on key tendonous attachment points on the bony surface that reflect shortened muscle fibre activity associated with the ASRs in the region found in the previous step. These attachment points will always be both tender and generate increased temperatures due to focal oedema. Palpation can work here only if the therapist has an accurate knowledge of bone and muscle anatomy and is sufficiently skilled in soft tissue palpation. My preference is a small, handheld, infrared ThermoScan unit that measures tendon temperatures to within 0.1 degrees F° over 2-3mm. There are 17



Step 2: Indicator Point Assessment

indicator points and the supra spinous ligament of each vertebrae to learn in this step. It will take 2-3 minutes to perform in the beginning and 10-30 seconds once the therapist is comfortable with the procedure. At this point you will have identified the ASR by exact location as originating at specific vertebrae on a specific side of the spine. You can have 28 pairs of ASRs, or 56 individual ASRs when divided into right and left; each

with their own specific set of shortened muscle fibres. Remember that a reflex is a reflex and the ASR will always produce the same reflexively shortened fibres.

Step 3: Attachment Point Therapy

Once you have identified which ASR is predominant and active, you only need to go to the treatment charts associated with that reflex. Using the charts provided in the educational material, the therapeutic technique developed for treating consists of applying controlled pressure to the musculo-tendonous junction of each origin and insertion for the muscle fibre groups activated by the ASR.

The pressure should generate a sense of tenderness or pain to the client of a two to three on a scale of ten. Five on a scale of ten will result in splinting or guarding and ten is the maximum amount of pain the client can

imagine. A two to three level of pressure is mildly uncomfortable and easily tolerated for short periods of time. The client is in control of all pain by verbalising when the therapist is exceeding his or her definition or threshold as opposed to the therapist attempting to meter or guess the client's tolerable limits.

Within 10-20 seconds after application of pressure, the pain will begin to dissipate or fade. This is due to the slow pain fibre pathways of the spinal cord that are stimulated by the attachment point pressure. The pain signals travel to the brain and stimulate the para aqueductal grey area of the thalamus to release neurotransmitters that suppress pain. As the pressure continues, the neurotransmitters further build up in the spinal cord and shut down the ASRs ability to maintain muscle fibre activation. Pressure based stimulation of spindle fibres and Golgi tendon organelles

also contribute to this process. In turn, other muscles that are dependent upon the original reflex will release in a massive let down. The client will often feel whole regions of the body soften and relax.

Step 4: Integrating APT into current techniques

In a full session, all attachment points on the reflex chart are treated. This may take 15-30 minutes when skilled. Once the therapist is schooled in advanced SRA material, they will have the choice to use abbreviated and outcome specific strategies for mediating the ASR and reducing a host of complaints and conditions. The SRA technique can be fully integrated into all other massage techniques. It is highly recommended that the trained SRA therapist de-activate ASR activity through SRA before using other techniques. The ASR is the primary neurological driver

of shortened muscle fibres and by arresting this process; SRA eliminates key muscle fibres from drawing back up so that other techniques can to be even more effective.

SRA: The solution to the ASR cascade

The ASR is the most prevalent cause of pain and dysfunction in the neuro-musculo-skeletal system. The concept that a simple focal point of instability (facet) in the kinetic chain (spine) can create so much pain and suffering is both profound and utterly staggering. It is amazing that we have missed this key element in dysfunction, health and performance for so long.

SRA is an assessment and therapeutic system that addresses the demands of this problem head-on. Rooted in research originating from Europe almost forty years ago and developed over the past 15 years;



ASR Impact on Function

SRA reflects a skill set that brings predictability, dependability and reproducibility to the assessment stage of massage therapy. In essence, SRA brings consistency in measurable outcomes in a manner rarely seen in most branches of physical healthcare.

Through SRA soft tissue procedures, the massage therapist is able to profoundly affect and direct changes in local tissue physiology and global neurology safely and effectively. APT is easy on the client and on the therapist and does not deviate from scope of practice guidelines. It is fully supported through scientific literature, clinical evidence and classical research.

Case studies

Case study 1

Client: 48-year-old male scheduled for a right knee osteotomy/replacement due to progressive degenerative changes in the medial meniscus resulting in marginal bone-on-bone presentation.

Pre-SRA Status: Walking up or down stairs and further than 150 metres resulted in medial knee pain and peri-articular oedema.

ASR: T1 and T4R (right) affecting neuromuscular balance within the right hip and knee resulting in improper knee tracking and excessive medial knee loading.

Treatment: SRA procedures to the ASR

only. Therapies were not applied to the knee or lower limb during the entire course of treatment.

Outcome: Client could walk up and down stairs and run 2.5km without pain and with marginal oedema after 12 sessions. He could play soccer and volleyball without pain or oedema after 24 sessions. He is stable in the right knee without the need for knee replacement or other knee surgeries three years after initial SRA care.

Rationale: Upper thoracic ASRs can produce a cascade of spinal joint compression and secondary muscle contractions that affect lumbar nerve root function and distort patellar tracking and tibial loading.

Case study 2

Client: 30-year-old male professional cyclist for Discovery Channel Pro-Cycling Team sustained left pelvic impact injuries resulting in potential removal from completing the 21 day Vuelta del Espania Grand Tour in Spain. Radiographs were performed to determine if he had sustained a fractured lower thoracic vertebrae from three riders running over him while face down in a pellaton crash.

X-rays were negative for fracture and the diagnosis was bone bruise with oedema. He was instructed to leave the race in the morning. He had sustained left gluteal and severe left lower extremity road rash or abrasions and was in severe lower thoracic pain and respiratory restriction.



ASR Impact on Function

ASR: S1 and S2L (left) due to acute destabilisation.

Treatment: SRA APT 30 minute session only.

Outcome: Client was able to breathe fully and had an eighty per cent reduction in pain by the end of the session. He chose to ride in the morning without incident. His pain and dysfunction was minimal after a second session the following evening. He completed the race.

Rationale: S1 and S2 ASRs can cause upper lumbar and lower thoracic core muscle spasms that restrict breathing and induce pain.

Case study 3

Client: 54-year-old female office worker with chronic (ten year duration) Restless Leg Syndrome (RLS). Prior to treatment, client received a chiropractic evaluation which found evidence of degenerative disc disease of C4-5, C5-6 and C6-7 with reversal of the cervical curve from C4 to C7, Restless Leg Syndrome and multiple misalignments of the pelvis and lumbar spine.

ASR: C5L and C2L

Treatment: Ten sessions 1.5 hours each. SRA APT treatment at beginning of each session averaging 45 minutes followed by deep tissue Swedish massage to complete session.

Outcome: After three therapy sessions client was symptom free. Client continues to



Using broad base of elbow at 45 degrees

receive therapy sessions once per month. She continues to be symptom free six months later.

Rationale: C5 and C2 are complementary ASRs and strong activation of C5 or C6 will produce lumbo-sacral core muscle activation with secondary L4 and L5 nerve root compression and irritation, thereby producing fatigue and position aggravated random activation of thigh and leg musculature



Steady pressure at 45 degrees



Using a ThermoScan to find indicator points



Dr. Frank Jarrell

Dr. Frank Jarrell, DC educates and consults on SRA Therapeutic Systems, unresolved cases, and SRA Corporate Wellness in Europe and the United States. He also designed the 5MinuteBack.com back strengthening program.