

TRIGGER POINT CHARACTERISTICS

Active trigger points have four notable characteristics. They:

- ❖ are a hyperirritable locus
- ❖ restrict contraction
- ❖ restrict stretch
- ❖ generate a referral pattern

Trigger points are a hyperirritable locus.

This means that they more easily irritated when stimulated, for instance, when pressed. This means that there is a heightened area of neurological activity, which requires an escalated level of resources. This increases total load on the system, elevating arousal state. In biopsies, these areas appear to be swollen, darker muscle fibers.

For the therapist, this occurs as a sensitive, tight spot in the muscle. Many sensitive, tight spots in muscle occur that are not trigger points. Look for the other characteristics.

Trigger points restrict contraction.

This means that the motor unit for that fascicle of muscle does not properly contract weakening the muscle. During muscle testing, this muscle has difficulty producing a firm, steady contraction. This increases total load as motor planning changes to use less efficient synergists to generate movement.

Clients with trigger points complain of weakness and in the muscle. Sometimes, this is something that they directly recognize as weakness as when exercising. Often, they do not directly describe it as weakness. Instead, they may say, "head feels heavy" or their "leg seems sluggish." In other cases, it may be seen in assessment as postural distortions or muscle testing.

Trigger points restrict stretch.

During range-of-motion assessment, at proper speeds, trigger points produce a hard "end-feel."

This increases total load as motor planning is adapted to avoid lengthening the muscle.

Trigger points are often seen as existing in tight bands of muscle tissue. This is not always true. Trigger points in muscles that have been structurally lengthened create confusion in assessment for many therapists. This is because the trigger points engage and create referral when:

- ❖ The muscle lengthened quickly enough to cause proprioceptive activation of the trigger points
- ❖ The muscle has reached an end-range that causes proprioceptors to activate trigger points but is beyond the typical range of motion

Clients that practice yoga or other forms of stretching often stay out of pain by temporarily lengthening the muscle so that it does not often reach its end-range during their activities of daily living. They often see mild trigger point referral as the sensation associated to a "good stretch." Releasing governors of these trigger points often creates immediate increases in range of motion at the same time that strength improves.

Trigger points generate a referral pattern.

This pattern irritates the tissues through which it refers. This irritation may present as pain, itching, tingling, numbing, or any of a number of other sensations. The body is encumbered as it has to devote additional resources manage these hyperirritable tissues.

This creates a system that is more easily overloaded and becomes quickly fatigued or agitated when stimulated. Chronic fatigue and fibromyalgia are closely linked by this trigger point characteristic.

A client will often say that they do not have any referral from the trigger point being worked and then either scratch the area of referral or shake the extremity and complain that it is going to sleep. This is an opportunity for the therapist to explain that referral is not just pain

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but sensations felt at a distance from the trigger point when it is stimulated. When the client understands this, they will offer relevant information more often during assessment.

Secondary factors

Trigger points exhibit other common, pathological factors:

- ❖ Increased responsiveness. Muscles with trigger points are often overly reactive to touch or movement. This is demonstrated with involuntary contraction when the trigger point is active. Some of trigger point laden muscles seem to stay contracted even when not stimulated by touch or movement. This is not the same as when a relaxed muscle has restricted stretch because of trigger points.
- ❖ Accelerated fatigue. These muscles lose power more quickly when trigger points are active than when active trigger points are not present.
- ❖ Delayed relaxation. These muscles are slow to relax after contraction, which contributes to accelerated fatigue.
- ❖ Referred spasm. Muscles in the referral zone of the active trigger point may exhibit increased motor activity and spasm.

Clients find that when trigger points are released, exercise improves in strength and endurance. For clients that don't exercise, the activities of daily living that normally stress them, like driving or doing laundry, either stop stressing them or take much more to stress them.

These are the same characteristics described by clinicians who treat children with Sensory Integration Dysfunction. Hyper sensitivity, problematic recovery and difficulty transitioning to a new activity are all hallmarks in this spectrum.

REFERRAL PATTERNS

The referral pattern for a given muscle is statistically similar from person to person in:

- ❖ location
- ❖ pattern
- ❖ activities that generate referral

Tissues in the zone of referral show increased levels of agents that increase sensitivity in the nociceptors. Tissues in that area develop both referred pain and referred autonomic phenomenon. Referred autonomic phenomenon

For example, active trigger points in infraspinatus tend to create pain in the anterior shoulder when reaching overhead or behind the back to tuck in a shirt. These consistencies are very useful in assessment.

Once the clinician understands trigger point patterns, assessing the symptomatic muscle becomes more accurate as the referral (pain) pattern is often distal to the problematic muscle.

RECIPROCAL INHIBITION BREAKS DOWN

Trigger points create resistance

This combination of factors means that reciprocal inhibition breaks down. As the muscle is less able to stretch and generates irritation upon stretch, the muscle is less able to relax as its antagonist contracts. This encumbrance makes the body less efficient, slower and weaker.

Releasing trigger points produces the unexpected effect of making the area feel looser while also making it stronger. When trigger points are functionally released in runners and swimmers, the athletic performance improves dramatically.

DEVELOPMENT OF MOTOR PLANNING

Trigger points are a part of our coordination.

As we develop, trigger points are a major part of developing learned pathways that coordinate movement. As a trigger point is activated by proprioceptive input from a pathological joint, the body alters movement patterns to accommodate the modified fascicle, which is less able to contract or lengthen.

For example, when the body reads that the knee is displaced, it activates trigger points in the muscles crossing the knee. This changes movement patterns and so that gait is altered to, for instance, laterally rotate the thigh or prevent full extension of the knee in an effort to protect the displaced joint. Therapeutically,

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this is useful as de-activation of the trigger point by mobilization of the knee can produce immediate changes in range-of-motion and pain on movement.

Changes in position in order to succeed in motor planning are a part of learning to move. This happens as an infant, toddler, child, adolescent and even as an adult. Shifting the foot or leaning onto a stable leg sets the toddler's foundation for motor planning as an adult.

As a developing child, there is less dialogue with others about pain, balance and sensation than as an adult learning new positioning. Removing restrictions in joint play and releasing trigger points in children create possibilities for managing tasks more easily. Riding bikes, playing sports, attending in class and behaving at family gatherings becomes easier, less encumbered and more natural.

As the system becomes more encumbered with pathological changes to joints and other systems, active trigger points proliferate and pain-free options for motor planning become more limited. At the point that those limits make the activities of daily living unmanageable, people seek relief.

TRIGGER POINTS BY TISSUE TYPE

Trigger points occur in different types of tissue. Types of tissue include:

- ❖ muscular
- ❖ ligamentous
- ❖ cutaneous
- ❖ periosteal

TRIGGER POINT ACTIVATION

Trigger points have different ways that they become active.

Primary trigger points are the original site of injury and can be activated by:

- ❖ **Blunt trauma to the muscle.** This could occur, for example, by falling into a wall, being hit in a sport or injection.
- ❖ **Chill.** Muscles spasm to create heat sudden or sustained chill tends to activate trigger points that sustain their activity.

- ❖ **Acute overload.** This may happen when the muscle contracts or prevent a falling or sudden overstretching as when a dog pulls on a leash.

- ❖ **Chronic overload.** Repetitive activities that stress the muscle or sustained postures that overstretch the muscle are examples.

Accessory trigger points can be spontaneously activated and deactivated by:

- ❖ proprioceptive input from governing joints
- ❖ referral from key trigger points
- ❖ nerve entrapment or compression
- ❖ structural imbalances that create chronic overload
- ❖ referral from other systems (e.g. digestive)

LEVELS OF ACTIVITY

- ❖ Active trigger points produce either constant pain or intermittent pain that is aggravated by certain movements.

These are the obvious areas of pain presented by clients. Proper interview and assessment help to define these and understand the client's objectives.

- ❖ Latent trigger points do not produce pain in the activities of daily living. Landmark assessment, muscle testing, range-of-motion and physical examination can identify these latent trigger points. They produce pain on ischemic compression.

Bodies are filled with latent trigger points that do not interfere with daily activities. Choosing the relevant ones make therapy more efficient, effective in the short term and provides longer lasting relief.

- ❖ Quiescent trigger points do not generate referral even when stimulated.

Some clinicians would argue that the quiescent trigger point is not really a trigger point. Interestingly, quiescent trigger points can be reactivated quickly by simply recreating a governing restriction.

TRIGGER POINTS BY HIERARCHY

Trigger points can be classified by their relationship to other trigger points in the chain of governors and accessories:

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- ❖ Primary trigger points are the original site of injury
- ❖ Key trigger points generate structural stress or referral patterns that govern satellite trigger points
- ❖ Satellite trigger points are accessories to key trigger points