



The Tendon Guard Reflex

by Mary Rentschler, M. Ed.

How do we balance the needs to protect ourselves from danger and to take risks that facilitate learning? How can we comprehend our lives, the world, and our reading assignments, while keeping perspectives that encompass both details and context? The fascinating tendon guard reflex (TGR) is in charge!

Like all reflexes, the TGR has important ramifications for survival/protection *and* development, as well as both healthy and unhealthy (hypo- or hyperactive) manifestations. Today, though survival may not often depend on our physical ability to defend ourselves, we do experience high levels of stress that call forth the TGR.

Under chronic stress, and especially when we have no opportunity to dissipate tension by taking action, the reflex can remain active beneath our conscious awareness, keeping us either in constant motion or immobilized in an internal posture of withdrawal and search for safety.

The TGR is an automatic whole body reaction to a message from the brainstem. Under threat, this ancient survival-oriented part of the brain mobilizes for our protection. Depending on the nature of the threat, the body has three choices: freeze, fight, or run away (take flight).

When the TGR sets off a “freeze” response, the body collects its resources at its core; we bend forward, and stop. In the “fight or flight” response we straighten in preparation to move. Russian psychologist Svetlana Masgutova, Ph.D. refers to these two versions of the TGR as the “Red Light” and “Green Light.”

The “Red Light” TGR

The Red Light reflex sets off the “freeze” response by causing the abdominal, shoulder, and neck muscles to contract. The trigger can be a sudden, unexpected sound, sight or sensation. Hearing a suspicious noise upon opening the garage door is a perfect example of something that could trigger a normal Red Light tendon guard response. We stop in our tracks, hold perfectly still, quieting the body, while activating vision and hearing to locate possible danger.

In full maturation the Red Light reflex also supports one’s ability to narrow the field of attention, movement, and action, to concentrate on and analyze details. Such a state of intense focus, referred to in Brain Gym as “low gear,” is usually characterized by stillness or deliberate one-sided movements. In the garage example, we would move carefully, analyze the situation, and reach a logical conclusion about the source of the noise.

When the Red Light reflex is over-active, we have its negative version: an excessively narrow attention field and limited ability to act. Behavior becomes compulsive, over-focused on unimportant details. Children who perseverate or shut down often have hyperactive Red Light reflexes.

The “Green Light” TGR

An activation reaction, the Green Light TGR causes spinal muscle contraction, lifting and extending the spine, getting us ready to move. More developmental than protective in its initial purpose, it helps infants discover their spinal muscles.

When babies lift their heads at two or three months, they activate their spinal muscles for the first time. Lying on the stomach, they learn to arch their backs, and raise and stretch legs and arms. Later, when sitting up, the head-righting reflex emerges. Eventually the muscles that permit standing, walking, and posture control develop. The Green Light TGR, interacting with other reflexes, supports all this growth.

The mature Green Light Reflex also enables individuals to widen the field of vision, movement, and action, to see the “big picture,” to act and to foresee consequences. Easy contra-lateral movements usually characterize this state of more relaxed focus, referred to in Brain Gym as “high gear,” the basis for the ability to think and move simultaneously. If a threatening growl comes out of the dark garage, the Green Light reflex would trigger the flight response. On the other hand, a familiar voice will cause us to look up, relax, and move toward it.

In children with ADD and ADHD this reflex is hyperactive. The negative version, excessive widening of the attention span and chaotic, uncontrolled, impulsive movement is apparent.

Regulating the TGR

When integrated, both parts of the TGR bring the support of good postural dynamics into movement development, sensory integration, attention, organization, comprehension, and overall cognitive development. Individuals with poorly integrated TGRs are vulnerable to the extremes of the red and green lights: excessive withdrawal and self-protection or excessive engagement and inappropriate risk taking.

Structurally, the TGR activates a tendon/muscle/joint system comprised of the big toe, the foot tendon, the Achilles tendon, the hamstrings, the sacrum, the spine, various back and neck muscles, and the occiput. Many children with developmental challenges have chronic tension in these tendons and muscles, with accompanying motor/emotional/cognitive issues and, in severe cases, postural or structural abnormalities. Children with autism and/or speech delays are often toe walkers with extremely tight calf muscles.

Carla Hannaford, author of *Smart Moves* (see Booklist), recommends releasing the TGR to develop language in non-verbal children. Dr. Masgutova teaches parents to lengthen children’s foot tendons by massaging the soles and flexing and extending a child’s feet. Another simple intervention is pushing rhythmically on the balls of the feet while a child lies supine on the floor; this activity initiates a gentle relaxing movement that rocks the entire body from toe to head.

The TGR is one of many reflexes that respond well to intervention. Calming it can reset proprioceptors and reeducate muscle-tendon systems that habitually contract in unfamiliar learning situations. Energy then moves away from the survival-oriented brain stem into the frontal lobes, and the child experiences a feeling of participation readiness.

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