

# RNR™ or Reconnecting Neuromuscular Responses™ A Body Balancing Technique

## RNR™ 60-Hour Complete Full Body

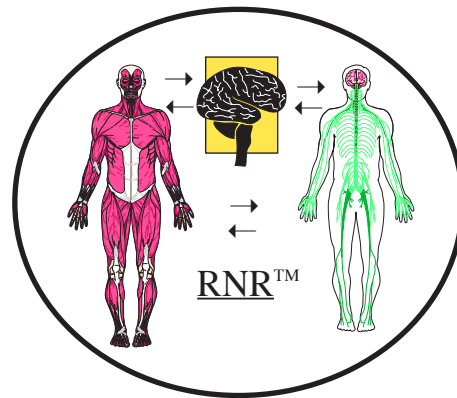
Course #: 20-451499

Course #1:

Course #2:

Course #3:

Advanced Course #4:  Partial Course:  # of Hrs: \_\_\_\_\_



Recognized by:



- ◆ State of Florida Department of Health, Division of Medical Quality Assurance [FL CE Broker] Provider #50-1184



- ◆ National Certification Board for Therapeutic Massage & Bodywork [NCBTMB] Provider #024315-00



- ◆ RNR™ or Reconnecting Neuromuscular Responses™ is approved by the Board of Certification, Inc. to offer continuing education for Certified Athletic Trainers. [Provider #PXXXX]

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NAME: \_\_\_\_\_

DATE COURSE TAKEN: \_\_\_\_\_

# Reconnecting Neuromuscular Responses™ or RNR™

## DEFINITION

**RNR™** is a neuromuscular massage technique that supports the relationship between the nerves and the muscles through the golgi tendon organs. Golgi tendon organs are nerve endings located in soft tissue fibers throughout the body. When a person experiences pain, the pain signal may cause splinting, which is contraction

of one group of muscles around another to immobilize them. Splinting is a wonderful mechanism; however when this signal does not 'turn off', the healing process may be hindered. **RNR™** helps the body remember to 'turn off' this signal, so healing may be facilitated at a faster rate.

## ADDITIONAL INFORMATION

**GOLGI APPARATUS** - A lamellar membranous structure near the nucleus of almost all cells. It contains curved parallel series of flattened saccules that are often expanded at their ends. The structure is best seen by electronmicroscopy. In secretory cells the apparatus functions to concentrate and package the secretory product. Its function in other important cells is poorly understood.

**GOLGI CELLS** - Multipolar nerve cells in the cerebral cortex and posterior horns of the spinal cord are Type I which possesses long axons and Type II which possesses short axons.

**GOLGI CORPUSCLES** - A sensory nerve ending or

receptor found in tendons and/or aponeuroses, an end-organ of muscle sense.

**GOLGI ORGAN** - A spindle shaped structure at the junction of a muscle and tendon, junctions are receptors for proprioceptive sense.

**PROPRIOCEPTIVE SENSE** - The correlation of unconscious sensations from the skin and joints that allows conscious appreciation of the position of the body.

**PROPRIOCEPTION** - The awareness of posture, movement and changes in equilibrium and the knowledge of position, weight and resistance of objects in relationship to the body.

## KEY TO ARROWS

Legend is provided within the **RNR™** Course Manual

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## How Golgi Tendons Work

In Leon Chaitow's book, **Soft-Tissue Manipulation**, Healing Arts Press, Rochester, Vermont 1988, there were several important points regarding Golgi tendon organs and the soft tissue. Some paraphrasing follows:

"...To understand the problems affecting any particular joint or soft-tissue area it is necessary to have an awareness of the various reporting organs which lie with them. There is a constant feedback of information from all tissues as...tone, tension, movement etc...sensory information is added to the changes in blood chemistry, to which the sympathetic nervous system is sensitive. Depending upon the environmental demands, and the requirements dictated by the conscious and unconscious mind, the tissues will be 'tuned' accordingly. 'What is happening in the peripheral machinery with respect to three questions? What is the present position? If there is motion, where is it taking us? And third, how fast is it taking us there?' A variety of inputs...give the answer to these important questions,...body can provide an appropriate response.

...structures involved.: *Ruffini End-Organs*: ...found within the joint capsule, around the joint, so that each is responsible for an angle of approximately 15 degrees, with that of the adjacent end-organ...are progressively recruited as the joint moves,...movement is smooth and not jerky...prime concern of Ruffini end-organs is a steady position...some extent concerned with the direction of movement.

*Golgi End-organs*: ...They are found in the ligaments associated with the joint... respond to muscular contraction which alters tension in the joint capsule, Golgi end-organs...can deliver information independently of the state of muscular contraction. This helps the body know just where the joint is at any given moment, irrespective of muscular activity.

*The Pacinian Corpuscle*: ...found in peri-articular connective tissue,...aware of the rate of acceleration of movement taking place in the area... There are other end-organs, but these three...provide... present position, direction and rate of movement of any joint.

*Muscle Spindle*: ...is sensitive and

complex...detects, evaluates, reports and adjusts the length of the muscle in which it lies, setting its tone. Acting with the Golgi tendon body, most of the information as to muscle tone and movement is reported. The spindles lie parallel to the muscle fibres, and are attached to either skeletal muscle, or the tendinous portion of the muscle...the spindle...two types. One is...the annulospiral receptor (or primary ending) and on each side...lies a 'flower spray receptor' (secondary ending). The primary ending...response to even small changes in muscle length. The secondary ending...when larger changes in muscle length have occurred...there are fine, intra-fusal, fibres which alter the sensitivity of the spindle. These can be altered without any actual change taking place in the length of the muscle itself, via an independent gamma efferent supply to the intrafusal fibres. This has implications in a variety of acute and chronic problems...with the CNS thus: The central connections of the spindle receptors are important...The activities of the spindle appear to provide information as to length, velocity of contraction and changes in velocity.

*Golgi Tendon Receptors*: These structures indicate how hard the muscle is working since they reflect the tension of the muscle, rather than its length, as does the spindle. If the tendon organ detects excessive overload it may cause cessation of function of the muscle, to prevent damage. This produces relaxation....'the nature of the information which these and other reporting stations are providing to the CNS. These represent the complex, harmonious, delicately balanced orchestration of the contraction and relaxation of many muscles.' The pattern of information fed back to the CNS and brain...the steady state of joints, the direction and speed of alteration in position of joints, together with data on the length of muscle fibres, the degree of load that is being borne, as well as the tension this involves. This total input is what occurs, rather than the individual pieces of information, as outlined above, from particular reporting stations. Should any of the information

be contradictory, to actually conflict with other information being received, what then:...for the excessive force exerted by external trauma to induce such hyperactivity of the joint and muscle receptors that the reports from that area become gibberish.' Should conflicting reports reach the cord from a variety of sources simultaneously, no discernable pattern maybe recognized by the CNS. In such a case no adequate response would be forthcoming. ...and it is probable that activity would be stopped. Spasm or splinting would therefore result...in many cases,...for the 'resetting' of the reporting stations, which allows them to again 'march in step, one with the other', and to provide usable information.

NMT, MET [muscle energy technique] and Strain-counterstrain are the tools which we may employ in attempting to assess the nature of soft-tissue dysfunction, and to normalize this....a variety of insults which may result in increased neural excitability; the triggering of a barrage of supernumary impulses, to and from the cord...terms 'cross-talk', in which axons may overload and pass impulses to one another directly; muscle contraction disturbances, vasomotion, pain impulses, reflex mechanisms, disturbances in sympathetic activity, all may result from such activity, due to what might be relatively slight tissue changes in the intervertebral foramina,...the concept that when any tissue is disturbed, whether, bone, joint, ligament or muscle the local stresses feed constant information to the cord and effectively jam normal patterned transmission from the periphery.

These factors combined with any mechanical alteration in the tissues, are the background to much somatic dysfunction....Our task in assessing and dealing with this complex of somatic dysfunction is aided by the diagnostic and therapeutic ability of neuro-muscular technique, as well as by the more recent development of muscle energy techniques...."

A special thanks for permission to use *Soft Tissue Manipulation* by Leon Chaitow, N.D., D.O., published by Healing Arts Press, an imprint of Inner Traditions International, One Park St., Rochester, VT 05767 Copyright© 1980, 1987, 1988 by Leon Chaitow pages 25 - 28 including the illustration.

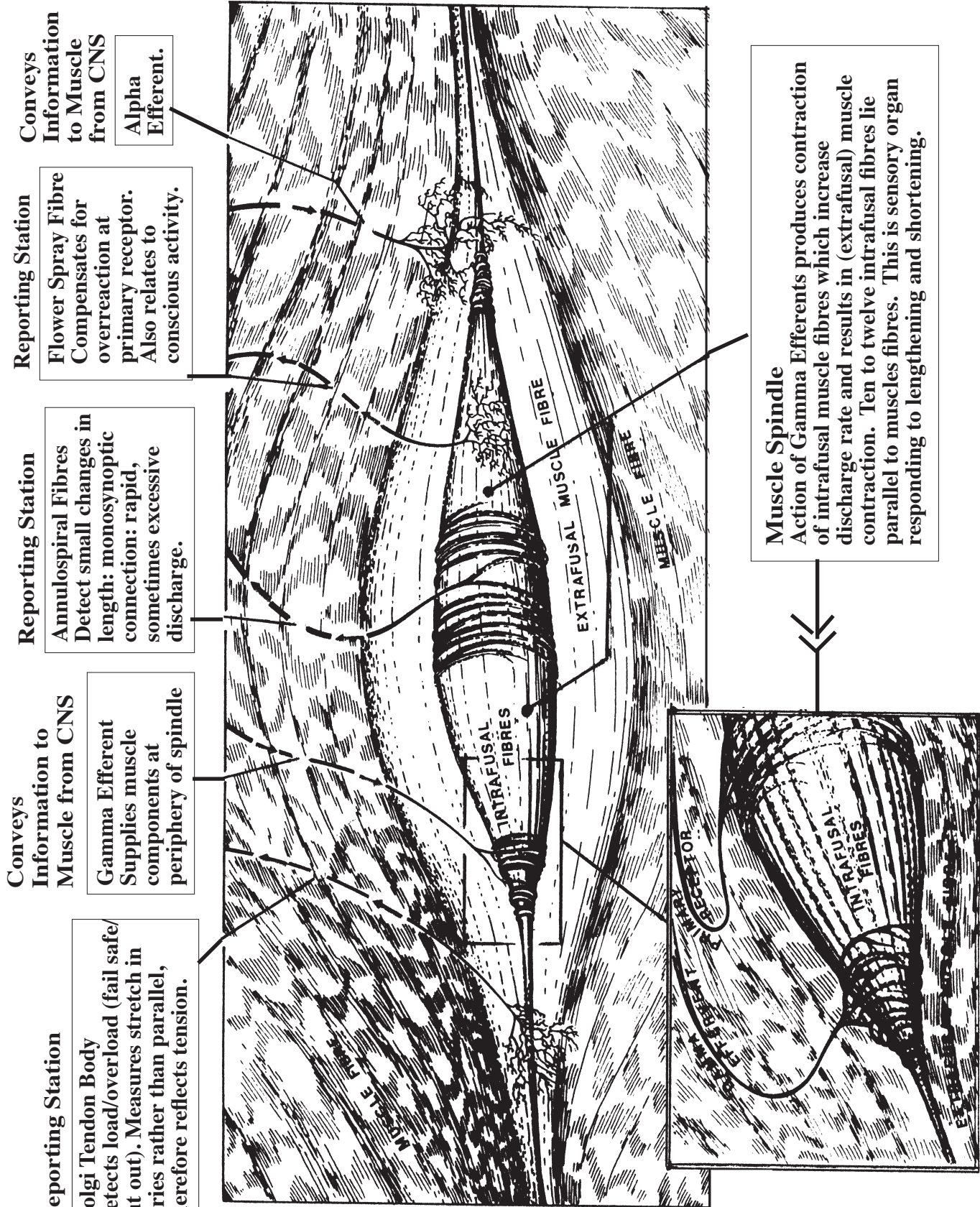


Illustration of Muscle spindle, Golgi tendon organ, and nerve supply to and from these reporting stations.

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