

LMD Sportsmassage Handout

The Body as an Oxygen Pump

In most sports, with the possible exceptions of bicycling and cross-country skiing, an athlete will run out of oxygen first. This means that as an athlete's body is performing, it needs a steady supply of oxygen and fuel, and when heavily pressed it will compromise its ability to supply oxygen before fuel (glycogen). Therefore, the primary function of an athlete's body during high levels of exertion can be seen in terms of its ability to pump oxygen into the lungs.

For the therapist, this means giving thorough consideration to the lungs and their surrounding tissues. The techniques for this part of Sportsmassage center around improving the ability of the lungs to pump as freely and efficiently as possible.

The Tib/Fib/SI Relationship

The flexibility of the joints at the proximal and distal ends of the tibia and fibula are of extreme importance to the athlete. These joints mediate rotational movement when an athlete plants a foot and changes direction. If they do not have sufficient range of motion, the rotational movement is passed upward.

Experience suggests that if the tib/fib joint is stuck, the same side SI joint will also become stuck. In this scenario, the rotational movement is transferred to the knee, and the anterior cruciate ligament (ACL) takes the torque (rotational pressure), making it vulnerable to damage. It is imperative to assess the available movement in the SI joints and the tib/fib flexibility bilaterally and increase their flexibility.

Pre-Event Sports Massage

The general characteristics of pre-event work are: it is always uptempo (caution - never work faster than you can feel), it is performed within two hours of an event, it is focused on the muscular emphasis of the sport, it lasts about 20-30 minutes.

A main characteristic of pre-event is that the therapist is working from the center of the muscle out toward the ends, emphasizing hyperemia of the musculo-tendinous junction of the muscles and muscle groups as well as tendons and ligaments.

Pre-event is basically a full body with exceptions. For example, while the therapist will always include the neck, he will rarely include the face. If the athlete has his or her shoes off, certainly work the feet, while the hands would only be included if dexterity is involved in the sport. In a volleyball player the forearms would be emphasized, in a runner probably not.

PNF

Proprioceptive neuromuscular facilitation is a technique that uses the neural reflex arcs built into muscles, tendons, and joints to control movement. The neurons involved in these reflexive control of movement are called proprioceptors: the ones in muscles are muscle spindles, in tendons golgi tendon organs, those in the joints we'll simply referred to as joint proprioceptors.

There is an interesting phenomenon built into these reflex arcs and it's called ***reciprocal inhibition***. When any movement of the body happens, there is, of course, a pattern of muscle contraction for that movement. We'll refer to that pattern as agonistic movement. The muscles that would perform the opposite (or reciprocal) of any agonistic movement (we'll call antagonistic movement) receive an inhibitory neural signal. The purpose of this inhibitory signal is to allow the agonistic movement more freedom, more precision, and more grace. This inhibitory phenomenon is called ***reciprocal inhibition***, or RI.

The strength of the inhibitory signal will not be of a level of inhibition that would compromise the integrity of the body, which in effect means it would not compromise the stability of the joints. This last bit is important to keep in mind when using RI in your work.

The PNF concept of reciprocal inhibition can be used in a variety of ways. Some uses are: to soften a hypertonicity, to increase the range of a stretch, to decrease pain in an area or within a movement, to break up adhesions or soften scar tissue, and pretty much affect any orthopedic problem.

Basic technique: have the client contract the antagonist of a tight muscle against resistance which you provide with your hand and you will lower the tone in the tight muscle. At its root the technique is as simple as that. It gains complexity in this use when you apply RI to a movement pattern as opposed to a single tight spot. In this context, there are some technique variations that can help get your RI more organized. These are

presented as suggestions and not in any sense rigid technique applications. In no particular order, they are:

- 1) Continued Movement - this describes the idea that you are allowing the client to move into the resistance you are providing. The tighter and/or more painful the area is, the closer to the middle of the range of motion you would work.
- 2) Repeated Contraction - simply refers to doing the same resisted movement a number of times. This is a good routine if an athlete has a point in his or her range of motion where the power in movement decreases for part of the arc.
- 3) Slow Reversal - here you would do your normal Continued Movement RI and then reverse it - resist them going the other way, then have them repeat the original movement. Very effective and helps balance out coordination.
- 4) Rhythmic Stabilization - same as Slow Reversal except you basically have your client move back & forth against resistance in the same place - no movement. Good when you're dealing with joint pain, especially if the client has a spot in their joint movement that is the least painful. That's a good place to work out of.

Most of these are PNF terms, and don't think of them as individual techniques, think of them as ideas that can be blended in any way you feel works. Any questions call or email anytime.