

Supplement 1: The Creation of an Standardized Evidence Based Massage Program for Elite Paracycling Athletes

**Taxonomy**

<b>Name of Stroke, Movement, or Action</b>	<b>Definition</b>
<b>Broadening</b>	Compressive force with movement perpendicular to muscle fibers.(1)
<b>Cold application</b>	The use of cold to stimulate the sympathetic response, reduce pain, and may increase circulation once the cold application is removed.(2)
<b>Compression</b>	Direct pressure into the tissue, generally at a 90 degree angel.(3)
<b>Friction</b>	The action of using compressive and shearing forces to rub one level of tissue over another level - however, there is no gliding on the surface of the skin and little to no lubrication is generally used. Pressure varies from light to deep and may be in line with the tissue fibers or cross-fiber in nature.(3)
<b>Gliding/Stroking</b>	Aka effleurage - pressures from light to deep, may be applied with hands, fingers, or forearms and follows the contours of the body.(3)
<b>Heat application</b>	Use of heat to attempt to activate the parasympathetic responses and/or warm the tissues.(2)
<b>Holding</b>	Light contact with the body/tissues with no movement or force in the contact.(3)
<b>Hydrotherapy</b>	The use of water, whether hot or cold to influence the structure and function of the body.(2)
<b>Kinesiology Taping</b>	Application of elastic tape to improve function and reduce pain.(4,5)
<b>Kneading</b>	Aka petrissage - with rhythmic and vacillating pressures the tissue is lifted, rolled, and squeezed.(2,3)
<b>Lengthening</b>	Compressive force with movement in line with muscle fibers.(1)
<b>Lifting</b>	The tissue is elevated away from its previous position.(3)
<b>Myofascial Release</b>	Lubricant free, gentle, slow and sustained pressure to the connective tissues with the intent to decrease restrictions in the fascia.(6,7)
<b>Other</b>	Other strokes as defined by the therapist - please define in your treatment SOAP notes
<b>Percussion</b>	Aka tapotement a rhythmic striking of the tissue that may use the following but not limited to: fingers, ulnar side of the hand, whole hand, fist or cupped hand.(2,3)
<b>Range of Motion (ROM), Stretching, Muscle Energy techniques</b>	May include Active Isolated Stretching, Proprioceptive Neuromuscular Facilitation, Positional release, Reciprocal Inhibition, Pin-and-stretch, Passive stretching, or other techniques to increase a joints range of motion, return muscles to their resting length, reduce pain and reduce muscle tension. (Please indicate if a particular technique is used)(1-3)
<b>Rocking</b>	A form of vibration which moves the whole body rhythmically to attempt to achieve entrainment (the synchronization to a rhythm).(2)
<b>Skin rolling</b>	The action of moving the skin away from the underlying muscular tissue.(2)
<b>Skin stretching</b>	Aka Manual Lymphatic Drainage (MLD) the stretching and torquing of the skin where the underlying musculature cannot be felt. Based on lymphatic system anatomy and physiology, when applied correctly can increase lymphatic flow.(8)
<b>Vibration</b>	A shaking type of movement that can range from fine to course movements and varying speeds from slow to fast. Aka jostling, shaking and rocking.(3)

Supplement 1: The Creation of an Standardized Evidence Based Massage Program for Elite Paracycling Athletes

**Pressure Levels**

<b>Pressure Level</b>	<b>Definitions: (Adapted from Tracy Walton)(9)</b>
<b>1</b>	Light pressure: Only moving skin, not feeling underlying structures, no tension in hands or arms of the therapist. E.g. craniosacral pressure, lymphatic drainage, and applying lubricant
<b>2</b>	Moderate pressure: slightly deeper than light pressure - think of rubbing lotion into skin, may contact superficial musculature and adipose layer
<b>3</b>	Medium Pressure: deeper than moderate pressure - used to warm up the muscles for deeper work, therapist is transferring some body weight into the massage strokes, medium layers of underlying musculature and connective tissue are contacted - nearby joints may move with this pressure
<b>4</b>	Strong Pressure: Deep layers of musculature and tissue are contacted - requires both body weight and some upper body strength to reach this level of pressure - nearby joints will move with this depth of pressure
<b>5</b>	Deep pressure: contact with the deepest layers of muscle and connective tissue and compressing these tissues against the bones - body weight and upper body strength are needed to reach this depth of work. (neuromuscular work, deep stripping, deep friction etc)

**References:**

1. Archer PA. Therapeutic massage in athletics. Philadelphia: Lippincott Williams & Wilkins; 2007. 312 p.
2. Fritz S. Sports & exercise massage : comprehensive care in athletics, fitness & rehabilitation. St. Louis, Mo.: Elsevier Mosby; 2005.
3. Fong B, Lavery M, Pierce K, Salvo S, Schenkman S, Schmidt D, et al. Massage Therapy Body of Knowledge [Internet]. American Massage Therapy Association, Associated Bodywork and Massage Professionals, Federation of State Massage Therapy Boards, Massage Therapy Foundation, National Certification Board for Therapeutic Massage and Bodywork; 2010 May. Report No.: Version 1. Available from: [www.MTBOK.org](http://www.MTBOK.org)
4. Freedman SR, Brody LT, Rosenthal M, Wise JC. Short-term effects of patellar kinesio taping on pain and hop function in patients with patellofemoral pain syndrome. Sports Health. 2014 Jul;6(4):294–300.
5. Montalvo AM, Cara EL, Myer GD. Effect of kinesiology taping on pain in individuals with musculoskeletal injuries: Systematic review and meta-analysis. Phys Sportsmed. 2014 May;42(2):48–57.
6. Barnes MF. The basic science of myofascial release: morphologic change in connective tissue. J Bodyw Mov Ther. 1997 Jul;1(4):231–8.

Supplement 1: The Creation of an Standardized Evidence Based Massage Program for Elite Paracycling Athletes

7. Cao TV, Hicks MR, Campbell D, Standley PR. Dosed Myofascial Release in Three-Dimensional Bioengineered Tendons: Effects on Human Fibroblast Hyperplasia, Hypertrophy, and Cytokine Secretion. *J Manipulative Physiol Ther.* 2013 Oct;36(8):513–21.
8. Dr. Vodder School [Internet]. [cited 2014 Jul 3]. Available from: [http://www.vodderschool.com/manual\\_lymph\\_drainage\\_overview](http://www.vodderschool.com/manual_lymph_drainage_overview)
9. Walton T. *Medical conditions and massage therapy: a decision tree approach.* Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins Health; 2011. 431 p.