

## **SHOULDER INJURIES AMONG VOLLEYBALL PLAYERS- KINESIOTAPING AND TRIGGER POINTS THERAPY AS A THERAPEUTIC METHODS**

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### **INTRODUCTION**

In every sport discipline, trained either professionally or amateurishly, we are dealing with the problem of permanent overstraining the body in order to achieve better and better results. Constant repeating of certain movements, both in the training conditions and during the competition, cumulates the overloads which we may not be aware of, until they show off as a pain or dysfunction of some structures in our organism. As a result we have the development in certain discipline stopped and general activity breakdown, which is the worst scenario for any athlete. Among the volleyball players one of the most overstrained joints is glenohumeral joint. There may occur number of degenerations of both joint itself and surrounding tissues. This article is just about to focus on the injuries of the muscles and their fascia and introduce two therapeutic methods and their usage.

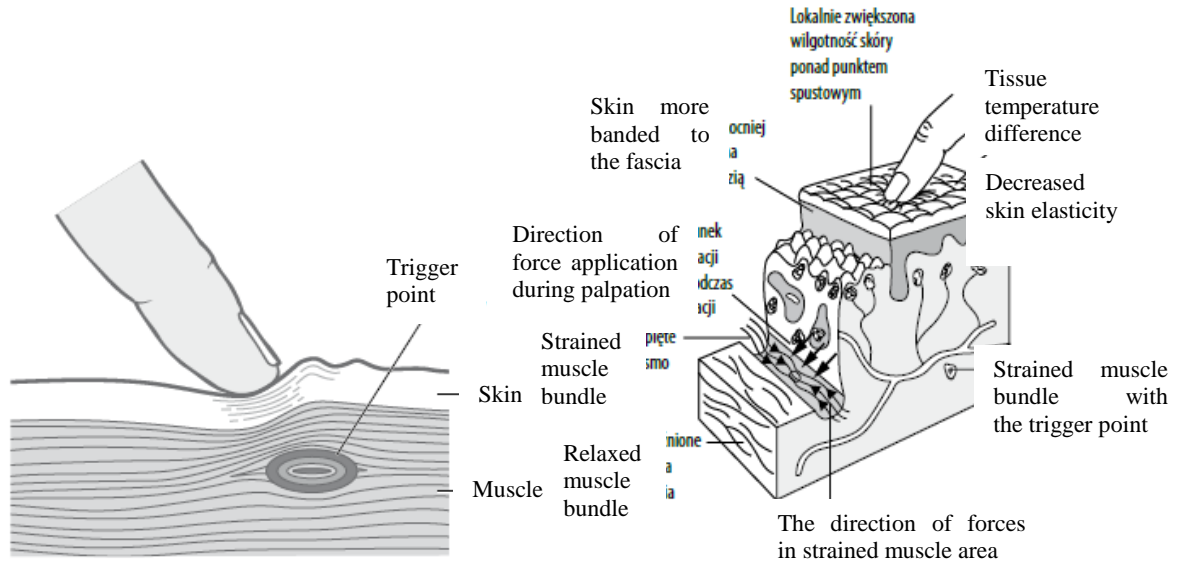
### **OBJECT**

The object of this study is to propose and explain two therapeutic methods and their use in the most common injuries of the shoulder soft tissues among the volleyball players.

### **TRIGGER POINTS AND MUSCULAR OVERLOAD**

As a result of the cumulating overloads the muscular system can produce pain. One of the reasons can be active or latent myofascial trigger points. There are four major theories of their genesis: the theory of the energy crisis, the theory of motor endplate, theory of the root model and the polymodal theory. Nevertheless which of them will turn to be true, the fact is that the troublesome and unpleasant trigger points are often responsible for pain and may become the source of severe disabilities. Those structures can have active or latent form, that can fluently change from one to another, confusing the therapist with its nonspecific symptoms. When being pressed active point can give ache that is local, projected (located away from the point of pressure) or radiating (spreading around from the point of pressure). Projected and radiating symptoms can have various forms such as pain, numbness, burning, itching etc., however the most important is that the patient with active trigger point recognizes those symptoms from previous or current pain episodes. There are also palpable symptoms such as overstrained parts of muscle "skipping" under finger of the therapist, touchable thickened spots of increased tone or the bundle tremor. Latent points don't give any ailment if they are not pressed. They can give similar symptoms to those given by active points as a result of the tremor, however the patient will not identify them or will associate them with very distant episodes. Main pain points may enclose smaller satellite points, which can grow increasing the discomfort if they stay uncured.

Another important issue is delayed onset muscle soreness (DOMS). As a result of exercising there occurs early soreness during exercise (following the biochemical processes in the muscle) and mentioned above DOMS (induced by the mechanical factor and its delayed effects) which usually occurs 24-48 hours after the end of workout. According to a common theory micro-injuries within the muscle fibers occur as a result of the eccentric exercises. Those symptoms only retreat after 5-7 days since the end of workout. As they last, one can notice reduction of the maximum contraction strength, local oedema, pain under pressure and the markers of tissue injury in a morphology study.



**Figure. 1-2.** Chaitow L., Fritz S., 2009, *Masaż leczniczy. Bóle dolnego odcinka kręgosłupa i miednicy*, Elsevier Urban & Partner, Wrocław.

A qualified physiotherapist is able to reduce discomfort and duration of dysfunctions caused by trigger points and delayed skeletal muscle soreness.

### THERAPEUTIC METHODS

During the first stage of therapy the pressure applied on the trigger point increases patient's pain threshold and thereupon enables further therapy with less suffering patient. The combination of muscle energy technique and compression techniques can significantly improve the efficiency of therapy. One of suggested muscle energy techniques is post isometric relaxation (PIR), that can be applied to overstrained and therefore blocked being shortened muscles. It restores their proper length and condition and as a result improves their efficiency. This technique is based on physiological mechanisms involved in muscle stretching - functional stretch reflex and reverse stretch reflex.

1. The therapist puts local pressure on the trigger point and keeps it until the pain or projected symptoms relieve. The pressure is increased until the pain sooths or disappears.
2. The patient breathes calmly and keeps the isometric tension of exercised muscle for about 10 seconds. The last inspiration is



deep and followed by very long calm expiration.

3. During the long expiration the patient relaxes the muscle tensed before, while the physiotherapist slowly extends it by providing movement in the adjacent joint for next 10-15 seconds.



Points 2 and 3 are repeated about 10 times. When the therapy is completed patient is instructed to tense antagonist muscles for about 10 seconds to provide feedback. This will enhance the stretching effect on exercised muscle, by building tension in antagonist group and leaving movement memory-trace in the cortex.

### **KINESIOTAPING**

Kinesiotaping is a method involving dynamic taping of treated parts of body using specially textured patches. They put a therapeutic pressure on selected tissues, stimulating relevant receptors (mechanoreceptors, nociceptors). Tapes can be modified by changing their flexibility, cutting strips of suitable length and shapes. To obtain particular therapeutic effects the therapist can affect muscles and fascia using various methods of application e.g.: longitudinal, fan-shaped, Y-shaped or star shaped. According to current needs there are also various taping techniques: muscular, fascial, ligamentous and functional,. During the therapy there can be used different tension of the tape from strong (100-75% stretch), through average (50-25%) to slight (20-10%). Strongly stretched tapes are usually used as a correcting technique or joint stabilization. Less stretched can be used for the muscular and fascial techniques. Either the direction of application is important while working with the soft tissues. By applying the tape from muscle insertion to origin we support the workout of a weakened muscle. Reverse application is used within overstrained or overworked muscles in order to prevent them from further overstraining.

### **TAPING METHODOLOGY**

The most common injuries kinesiotaping is used for, concern the soft tissues (muscles, fascia, ligaments), but it can be also helpful in joint injuries. Depending on desired effect the tape can be modified to suitable shape and length, and applied less or more stretched.

**Figure 2.** The most common applications in myofascial injuries:



*Biceps Brachii*



*Supraspinatus*



*Rotator Cuff Injuries*

**Figure 3.** Applications in joint injuries:



*Articulatio Humeri  
Trauma*



*Sternoclavicular  
Articulatio Trauma*



*Articulatio Humeri  
Sprain Pain (acute phase)*

### SUMMATION

In modern sports medicine based on physiotherapy, relevant therapeutic methods are used to successfully reduce the pain caused by shoulder injury and to stimulate regeneration of the overstressed tissue. Volleyball players, either professional or amateur, should reach for the specialistic and effective methods to maximize the therapeutic effects and be able to return to training this discipline as soon as possible.

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