Recovery Strategies - Role of Massage:

Introduction

Massage and associated soft-tissue treatment is an important component of the training process for many elite athletes. It can be of value in speeding recovery following heavy training or competition. It has a valuable role in the prevention of injury, particularly in regard to the effect of over-use and overload. Additionally it can have a part to play in the rehabilitation process following injury.

As well as these indirect benefits to potential performance gain, there **may** be direct performance benefits through the application of massage techniques, where they help reduce the intrinsic barriers and inertia in the athlete caused by myofascial restriction.

Like the general population, athletes may bring unhelpful habit and lifestyle-associated biomechanical and postural effects into the training situation. Massage can usefully and pro-actively intervene where this is the case.

The best use of massage at elite level, is when it is one element of an integrated team approach, focusing on individual needs. The most distinctive contribution massage can make, is likely to be pro-actively in recovery and in injury prevention.

Definition

Defining what is meant by the term "massage" is fraught with difficulty, and even more so if attempting to do so for "sports massage". The generic term covers a wide range of different techniques with a different rationale for application. Often the term massage is in popular usage taken to mean the application of basic techniques such as effleurage, petrissage etc. and does not acknowledge the wider range of techniques. This has implications for the use of massage in recovery.

Evidence

Massage has a long history of use in the recovery process in high performance sport. Its beneficial role has been established and accepted by empirical practice, individual perception of value, and is partly anecdotal. It is accepted that there has to be careful and appropriate use of massage in competition, as over-working and inappropriate techniques can lead to short-term reduction of power output/performance.

There has been some limited scientific research into the effects of massage on performance. Generally the research has been small-scale, and often suffers major design and methodological flaws. Some of the physiological claims about massage have not been substantiated, e.g. change in blood flow within certain tissues, and concepts such as "removal of toxins". (1) (2) These raise questions both about the quality of the research, and also some of the claims regarding the effects of massage. The more consistent results from these studies point to reduced perceptions of fatigue, psychological and neurological benefit, and enhancement of sleep. This is not surprising as the research tends to concentrate on basic Swedish massage techniques. Some evidence exists of reduction in swelling and discomfort associated with DOMS, (3) (4), and that combined active recovery/massage may be helpful in competition.(5) Increase in flexibility and strength following a longer programme of massage has been demonstrated by one study. (6)

The Training Effect

Within a planned periodisation programme, this involves putting muscles and body systems under intense loads. These intense loads cause microscopic damage (micro-trauma) to the muscle and fascial tissue. It is in the healing (recovery) phase following overload that tissue and systems adaptation occurs. One of the range of training gains is that muscles grow stronger.

Some unwanted side-effects of training

Training and competition often lead to increased and abnormal muscle tension, which may be felt as taut "ropey" bands and overall muscle tightness.

Damaging changes happen to muscle following injury (including training micro-trauma). Disorganised fibres of collagen scar tissue form, and adhesions develop, where muscle, fascia and other tissues stick together. This may:

- **reduce flexibility**
- **limit performance**
- **increase injury risk**

Tight muscles reduce the blood flow, which supplies the oxygen and nutrients required for effective recovery. This sustained tissue stress, particularly if allied with previous injury, can cause locally ischemic areas which may develop into trigger points that compromise function and increase injury risk.

Tight muscles also slow the removal of metabolites, which it is suggested may stagnate in the muscle tissues leading to inflammatory effects and muscle pain. (There is some controversy over this hypothesis, which remains to be resolved)

If the tightness in one muscle group is not balanced by the opposing compensating muscles, the abnormal muscle pull can cause biomechanical problems to develop. This can lead to joint problems e.g. knee, back, pelvis, groin, neck etc. Other relevant associated influences are technique/postural/dominance/one-sidedness effects.

Muscle tightness interferes with the nerve feedback mechanisms (the proprioceptors) that ensure efficient and smooth control of movement (and good technique).

Excessive muscle tension also puts additional stress on muscle attachment sites and tendon junctions. Tight muscles themselves are inelastic and susceptible to injury.

In addition to these musculoskeletal effects, there can be a range of unwanted neurological, immunological, psychological and motivational side-effects of training, which may of course inter-link with each other and the musculo-skeletal ones.

Possible Benefits to Recovery:

Some of the following claimed benefits should result from basic massage techniques, whereas others will tend to come from more advanced and focused techniques.

- Impact on lymphatic/blood circulation, influencing waste removal from and food/oxygen supply to ischaemic areas, leading to faster recovery and earlier return to effective training
- Decreased sensations of fatigue
- Inhibiting sympathetic system and/or stimulating parasympathetic system leading to positive psychological effects, inducing calm and mental relaxation, and encouraging effective sleep
- Reducing muscle spasm and normalising muscle tone
- Calming nervous system and improving efficiency of control systems and motor patterning
- Releasing trigger points which compromise efficient muscle action and predisposition to injury
- Breaking down adhesions and the "glueing" together of tissues, increasing muscle elasticity, efficiency of muscle action and reducing the risk of future injury
- Stretching fascia and muscles reducing excessive muscle tension, increasing joint range of movement, as well as reducing stress on muscle/tendon junctions
- Realignment of collagen fibres after injury, leading to more flexible, stronger scar tissue
- Helping to identify potential trouble spots before they develop symptoms. Skilled touch may reveal soft tissue under stress that the athlete was unaware of, and can be an early warning of functional/structural problems.

Issues for consideration:

- Appropriateness of different forms of massage in different recovery scenarios e.g. training, post-travel, intra/post competition.
- Identification of specific recovery phases, groups or individuals to be targeted
- An athlete education approach about massage possibly including self-massage. Could link in with postural awareness issues
- How massage may link in with and contribute to other recovery strategies.

References:

1. Hemmings B. et al. Effects of massage on physiological restoration, perceived recovery and repeated sports performance. *Br J Sports Medicine 2000*; **34**: 109-115

2. Robertson, Watt, Galloway. Effects of leg massage on recovery from high intensity cycling exercise. *Br J Sports Medicine 2004*; **38 (2):** 173-176

3. Zainuddin et al. Effects of massage on delayed-onset muscle soreness, swelling and recovery of muscle function. *J Ath Train 2005*; **40(3):** 174-180

4. Hilbert et al. Effects of massage on delayed-onset muscle soreness. *Br J Sports Medicine 2003*; **37**: 72-75

5. Monedero & Donne 2000

6. Effects of chronic sports massage on strength and flexibility. *Medical & Sci. Sports & Exercise.* **34**(5) Supplement 1:47