Friction Techniques

Rattray Pg. 41

Overview

Frictions: An accurately delivered penetrating pressure applied through fingertips.
The purpose of friction massage is to maintain the mobility within the soft tissue structures of ligament, tendon, and muscle and to prevent adherent scars from forming. Frictions are a repetitive, non-gliding technique with a specific tissue focus. Usually the fingertips, or a broader contact surface, are used to penetrate dense connective tissue.

Friction History:

Described first by James Cyriax in 1984, transverse or cross-fibre frictions were developed to mobilize adhered tissues. Initially believed to be breaking down adhesions between fibers of the injured tissue, current research has indicated that fibroblast proliferation may be the desired outcome.

Cross-fiber frictions can be used in the early subacute and chronic stages of healing to break down adhesions which prevent normal motion. These adhesions may be within muscle fibers and between structures such as ligaments and tendons.

Breaking down adhesions helps to form a smaller, more mobile scar. Over a series of treatments, the collagen fibers of the developing scar tissue are thought to be realigned by repeated frictions. (In a manner that is similar to repeatedly rolling the fingertips over a pile of toothpicks lying in a random haphazard pile. Eventually the toothpicks will orient perpendicular the direction in which the hand moves.) In late subacute stage, the collagen fibers are weaker and break more easily, while in the chronic stage, deeper more vigorous frictions are required to break down the collagen.

Although Cyriax advocated their use in acute injury to muscle, ligament or tendons, frictions may be too painful and therefore not tolerable for the client at this stage. And also the fibers may be too weak to be able to stand the frictions, which could cause further damage or injury.

As well as breaking down adhesions, cross-fiber frictions have other effects. The depth of the pressure used is sufficient to cause minor tissue damage and inflammation, with the resulting release of histamine and bradykinin. These chemicals have an effect on the local circulation and on nerve receptors for pain. The local vasodilation that occurs likely accelerated tissue repair. The nocioceptive chemicals released by the frictions will cause pain which is thought to close the “pain gate”. In addition pain blocking endorphins may also be released. The result is a temporary local analgesic during the application of the technique.

Friction Assessment:

It is important to assess for the specific structure involved and the site of the adhesion, rather than just treating a painful area. This is because of referral pain.

Diagnostic movements and palpation must single out the tissue at fault and the exact location on that tissue. With muscle tissue injuries the practitioner would use AROM and PROM to assess for painful ranges, following with ARROM to isolate the specific adhesion site.

With injuries to the tendon we can isolate the damaged fibers with RROM and specific palpation, while ligament and joint capsule damage is located with PROM and stretching.

Friction Protocol (treatment):

Begin with general treatment to the area to "warm-up" and prepare the tissue for deeper techniques. With **informed consent** from your patient, place the *tendon* in a slight stretch in order to provide tension to the area being treated(Creates maximum force between tendon and sheath). Where with muscle and ligament frictions, slightly slacken the tissue to be treated. (This allows maximum separation between the fibers so adhesions are broken down)The depth and duration of treatment vary according to the stage of tissue healing, the depth of injured tissue, and the clients' pain tolerance. Early sub-acute injuries take less time to treat then chronic adhesions. The following protocol is taken from "Management of Common Musculoskeletal Disorders: Physical Therapy Principles and Methods" *Hertling & Kessler*.

1. Light to moderate depth for 2-3 minutes. An analgesic effect should occur.
2. Moderate to deep for 2-3 minutes and discontinue if pain does not lessen.
3. Deep for 2-3 minutes and discontinue if pain does not lessen.
4. Ice area.
5. Active or passive stretch to the area of treatment to promote proper realignment

Apply circulatory techniques to the tissue between each set of frictions. Treatment frequency should be within 48 hours of previous treatment. The patient should be instructed to use AROM with muscle tears, PROM with ligament tears, and avoidance of the activity implicated in a tendon lesion. It has been suggested that frictions may take 6 to 10 sessions of 10 minutes or more before having noticeable changes. Initial doses may be as brief as 1 minute to assess patient's tolerance to technique. Most overuse conditions respond within 2 weeks to 2 months.

Frictions are designed to increase mobility in tissues by reducing adhesions and therefore mechanical restriction and irritation (H&K)
"Orthopedic Massage: Theory and Technique", by Whitney Lowe suggests shorter treatment durations interspersed with other techniques. He suggests applying frictions for 20 seconds, and then following it with effleurage, petrissage, AROM and PROM. Lowe suggests repeating this series several times during the treatment session for maximal effectiveness, without exceeding the pain tolerance for the patient.

For an overview of Frictions in Rattray, see page 41.

Indications:

- Fibrosis, post trauma (muscle, ligament, capsule, tendons)
- Tendonopathy
- Bursitis
- Sprains
- Attachment Release

Effects:

- Current research suggests the primary effect of frictions to be the stimulation and migration of fibroblasts to the hyperemic/inflamed site.
- The proliferation of fibroblasts results in an increase in collagen regeneration and repair.
- Appears to reduce the binding of adjacent tissues and leads to the formation of a functional and mobile scar.
- Stimulates mechanoreceptors to produce afferent impulses that may stimulate a temporary analgesia.

Contraindications:

- Acute injury
- Hypotonic or atonic muscle
- Fragile skin
- Skin lesions
- Recent incisions
- Anti-inflammatory medications
- Anticoagulant medications
- Rheumatoid Arthritis
- Peripheral vascular disease
- High dose, long-term steroid medication