the techniques of Swedish massage

Steven Goldstein and Lisa Casanelia

chapter 16

LEARNING OUTCOMES

- **Describe the conceptual context for palpation and palpatory literacy**
- **Describe the major Swedish massage strokes**
- **Discuss the application of each of the Swedish massage strokes**
- **Discuss the precautions of application for each of the Swedish massage strokes**
- **Describe the effects of each of the Swedish massage stroke**

INTRODUCTION

The massage manipulations of Per Henrik Ling, often referred to as the father of Swedish massage, have been taught and performed for over two centuries. These techniques have been and are still being used by massage therapists, other manual therapists and health care workers throughout the world. According to *Dorland's Illustrated Medical Dictionary* (2000) a manipulation is applied skilfully as a form of treatment via the hands or with the use of mechanical means. Thus a therapist who uses massage manipulations as a form of treatment could be described as having the ability to treat with their hands in a skilful manner. Such manipulations would include the various 'strokes' introduced throughout this chapter.

There are five major categories of Swedish massage strokes that are commonly applied and these are known as: effleurage; pétrissage; tapôtement; friction; and vibration. Each category has a specific role to play in contributing to the overall massage sequence. This chapter will define each of the five Swedish massage strokes and discuss their application, usage and variations.

The importance of intelligent touch cannot be overstated. A conceptual basis for intelligent touch through the development of palpatory literacy is also presented to help facilitate the student and practitioner to deliver quality massage applications. Firstly though, the value of therapist intent and presence will be discussed.

HAVING INTENTION AND PRESENCE

For massage strokes to be fully effective, the practitioner can increase the efficacy of the application with the knowledge of how to use intention and presence as an effective tool. What is meant by intention? Simply put, it is the conscious desire with focus to apply each stroke in a particular fashion. A skilled practitioner can utilise their intention to deliver the best possible outcome for their applied technique. Intent later becomes an energetic vehicle in which the practitioner can participate in the outcome of the application.

Presence involves committing your body, mind, heart and soul to the task at hand in the moment. When performing massage, one should listen with all faculties, and attend to the effects of the applied application through the use of cognitive, intuitive, visual and auditory senses. It is a way to directly monitor the language of the body both quantitatively and qualitatively by the use of the hands and mind.

Presence allows us to be fully aware in the moment with extraordinary *relaxed* focus on the massage task at hand. Both of these qualities, intention and presence, are the difference in what can take massage practice to the next level of excellence.

PALPATORY LITERACY

Most students and practitioners of massage focus upon the application of technique as the crucial element in the delivery of massage. The component most often missing is the touch behind the technique and the ability to discern the tissues and structures below the practitioner's hands.

The 'literacy of palpation' or palpatory literacy is the ability to distinguish various tissue layers, discern localised temperature variations, tissue texture and

tonality. Thus, becoming literate in palpation is a means through which we achieve our 'end'.

> Palpation serves as a bridge into the body–mind continuum and between structure and function. It involves perception, discrimination and analysis (aspects of conscious awareness) as well as precision, sensitivity and dexterity (aspects of physical process). This brings to awareness the ways which the mind is expressed in physicality and how physical states are reflected through the mind.
>
> *(Burman & Friedland 2006: 161)*

The dictionary definition for palpation is obtained from the Latin word *palpare* (circa 1852), meaning to examine by touch especially medically (Merriam-Webster Dictionary).

To use touch skilfully is to become proficient in using palpation as a language that allows our ability to assess. Assessment is the foundation of manual therapy and, along with the delivery of massage, palpation is at the heart of assessment. It would be unimaginable to begin treatment without a sense of assessment, and assessment cannot occur without discerning palpation. How is one to determine objective or subjective findings of the soft tissue without assessment of the soft tissue? The problem-solving and the evaluative process in selection of technique will have *palpatory literacy* at its core.

Leon Chaitow writes that, according to Viola Frymann (1963), 'Palpation cannot be learned by reading or listening; it can only be learned by palpation' (Chaitow 2003: 3). Practitioners with the greatest degree of 'rigidity,' in terms of their training, often have the hardest time allowing themselves to feel new feelings and sense new sensations. Those with the most open, eclectic approaches (massage therapists are a prime example) usually find it easiest to 'trust' their senses and feelings (Chaitow 2003: 15).

According to Karel Lewit (1999), a noted Czechoslovakian physician, to begin to learn palpatory skill, one must possess a firm grasp of anatomy and the supporting soft tissue structures. According to Chaitow:

> Palpation of tissue structures seeks to determine the texture, resilience, warmth, humidity and the possibility of moving, stretching or compressing these structures. Concentrating on the tissue palpated, and pushing aside one layer after another, we distinguish skin, subcutaneous tissue, muscle and bone; we recognise the transition to the tendon, and finally the insertion.
>
> *(Chaitow 2003: 5)*

Palpation is touch awareness, and it often requires tactile exploration of a variety of tissue layers over time, spanning multiple hours palpating a variety of body types. As they say 'practice makes perfect' and this aphorism is most true in palpatory literacy.

> Sensing the subtle variations in the qualities of various tissues requires much practice. Distinguishing the subtleties of tissues will enable the therapist to 'build a personal database of tactile somatic experiences: 'The fascia feels like… the muscles feel like…'. We can then recall these bits of sensory recognition during our next hands-on experience as guideposts to knowing what we are touching; comparing this with other sensory memories stored in our somatic databases, and with what feels 'normal'. Once we have a firm grip on what normal feels like, abnormal becomes more obvious. Also, it becomes easier to detect changes in our clients from session to session, and even during a session.
>
> *(Foster 2006: 109)*

THE FIVE SWEDISH MASSAGE TECHNIQUES

The five Swedish massage techniques are a classification system of the many variations of techniques used in Western or Swedish massage. Johann Mezger (1838–1909) has been credited for the introduction of French terms still used to describe four of the five massage techniques: *effleurage*, *pétrissage*, *tapôtement* and *frictions* (Salvo 1999). That said, these five often form the basis of massage training that goes on to blend and cross-fertilise more complex strokes. The fifth applied technique, *vibration*, became popular in the late 19th century (Tappan & Benjamin 1998). Over the years many authors have varied the classification system to include additional manipulations: shaking, compression and touch.

Effleurage

Definition

Effleurage is a gliding manipulation of the superficial tissues. It is used as an introduction to touch at the beginning of the massage, and can be blended as a transition stroke between the other five massage techniques. Generally at the beginning of a massage, effleurage is used to apply the lubricant, spread it over the surface, warm the surface layer of tissue and reflexively create a smooth relaxing flow and rhythm for the application of the stroke. Local circulation is increased with the application of effleurage, and the underlying tissues are warmed in preparation for deeper manipulations.

Effleurage is derived from the French verb *effleurer*, meaning 'to brush against, to skim over or to touch lightly'. Some authors equally refer to this manipulation as stroking or gliding (Cassar 1999; Loving 1999; Tappan & Benjamin 1998), whilst others describe stroking and effleurage as two different manipulations (Rattray & Ludwig 2000; Hollis 1998; De Domenico & Wood 1997; Holey & Cook 1997).

The major difference between stroking and effleurage relates to the depth of pressure applied. Stroking is usually performed slowly with gentle pressure that is firm enough for the client to feel yet light enough so that there is minimal deformation of the subcutaneous tissue (Andrade & Clifford 2001; De Domenico & Wood 1997). It is believed that stroking offers little direct mechanical effect, as the depth of technique is too superficial. However, significant reflexive effects have been observed with the application of stroking.

Effleurage is applied with greater pressure than stroking, and its effect on the subcutaneous tissue could be described as deforming. Effleurage by contrast has a greater mechanical effect and may also produce the same reflexive effects as stroking. Effleurage is said to have a major effect on venous and lymphatic return.

The therapist generally applies effleurage with the whole palmar surface of the hand placed on the client's body. The therapist then uses their body weight to 'lean into' the superficial tissues, pushing the stroke forwards. Traditionally, this technique is performed in the direction of venous and lymphatic flow in the direction of the heart (Kellogg 1895; Palmer 1912; Beard & Wood 1964; Andrade & Clifford 2001). There is a belief amongst some authors that structural damage may occur to the valves within the veins if effleurage is applied in a centrifugal direction (Tappan & Benjamin 1998). However, no evidence exists to substantiate this claim, yet if the treatment goals are to increase venous and lymphatic flow, then the direction of the technique should be aligned to the direction of fluid flow.

An excellent example of refined effleurage is the Hawaiian bodywork of *Lomi Lomi* massage. Full contoured gliding flowing strokes are done primarily with the forearms and elbows with the hands as a guide.

Description

The application of stroking and effleurage can be likened to the affectionate caress of a loved one or the petting of a favourite animal. The stroke is applied purposefully with gliding movements that gently follow the contours of the body. It is applied over large areas, and usually moves distal to proximal in the direction of venous (blood returning to the heart) and lymphatic flow to enhance their effects. In order to maintain flow and continuity, the return stroke travels in the opposite direction with lighter stroking pressure to return to the starting position.

Throughout the stroke, the contoured and sculpted palms, hands, fingers or fingertips mould and form to the shape of the body region being treated (De Domenico & Wood 1997). The hands are relaxed and the stroke is performed in a smooth and rhythmic fashion. The pressure employed is derived from the therapist leaning their body weight into the stroke.

Techniques

The therapist can vary the way in which effleurage manipulations are applied by using differing hand techniques. Depending on the region being treated and the desired effect, the therapist may apply effleurage with the forearms, palms, contoured hands, fingers or fingertips, and even the side or the back of the hand.

Rowing stroke

The rowing stroke is generally applied as an introductory stroke and is often repeated throughout the massage sequence, integrating other strokes together, transitioning from one stroke to another and when moving positions around the massage table. The rowing stroke is performed by placing the palmar surface of the hand on the tissues. The hands glide toward the top of the trunk or limb, where the hands then separate and perform a return gliding stroke down the sides of the trunk or limb (see Figure 16.1). The hands should be broad and flat with the entire surface area of the hand making contact with the tissue, the fingers should be relaxed and not rigid or squeezed together and the fingertips should be slightly curled down to meet the tissue.

Half rowing stroke (reinforced effleurage)

Reinforced techniques allow the therapist to penetrate the deeper tissues of the body by decreasing the surface area of application from two hands to one and focusing the body weight of the therapist through this one hand. The half rowing stroke is generally performed after the rowing stroke, working deeper into the tissues. The technique is applied by placing one hand over the other to create a reinforced position. The hand closest to the body is the one making direct contact with the tissue and the hand reinforcing the stroke will be the more lateral hand, allowing for the body to be in a good position of alignment. The reinforced hands glide towards the top of the trunk or limb and then return lightly in a more lateral position along the side of the body, returning to the starting position (see Figure 16.2).

Forearm effleurage

Forearm effleurage is a broad gliding stroke performed with the fleshy part of the therapist's forearm. The therapist aligns their shoulder over the forearm to allow proper use of their body weight in the application of this technique. Forearm effleurage can be applied flowing and swiftly warming the superficial layers of tissue or it can be applied more slowly and directly to specific tissues to penetrate into the deeper layers. The forearm can be applied in a longitudinal fashion using the length of the forearm with the hand leading or in a perpendicular fashion with the therapist's hand facing across the body (see Figure 16.3). The therapist should ensure their hand is

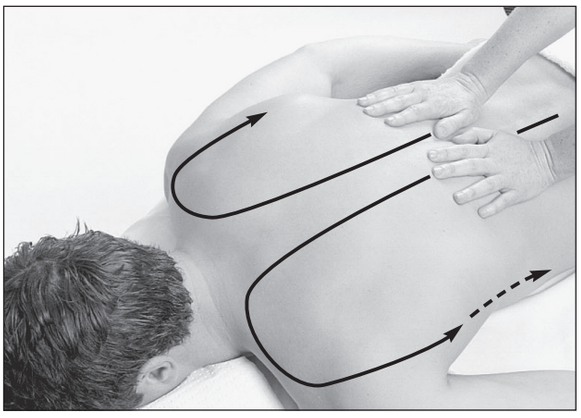

Figure 16.1 Rowing stroke

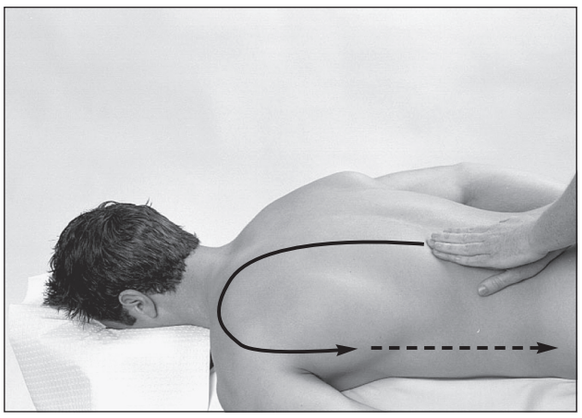

Figure 16.2 Half rowing stroke

Figure 16.4 Fist effleurage

Figure 16.3 Forearm effleurage

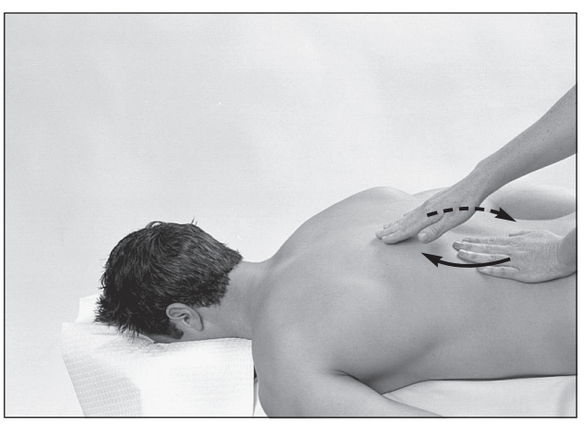

Figure 16.5 Hand after hand

not squeezed into a tight fist when using forearm effleurage as this contracts the forearm muscles and hardens the feel of the technique. In addition, the therapist should be cautious that the point of the elbow doesn't come into contact with spine or any other bony prominences.

Fist effleurage

Loose fist effleurage is a broad strong effleurage technique primarily used on large muscle groups with well-developed or very tight muscles. This technique engages both the deep and superficial tissues and is performed with the 'flat' surface of the fist. The dorsal surface of the phalanges (as opposed to the knuckles) makes contact with the tissue. The technique is reinforced by the therapist's other hand, which wraps around the wrist of the massaging hand to reinforce the wrist and strengthen the stroke (see Figure 16.4). An alternate reinforced position is with the second hand cupped inside the loose fist; this allows for even greater depth of pressure to be applied.

Hand after hand

This rhythmic technique is soothing and warming to the tissues with short alternating strokes that should feel like one continuous stroke. One hand glides up the trunk or limb for a short distance followed by the other hand, the leading hand is lifted off as the other hand follows through and the massage therapist continues to alternate hands as they move forward (see Figure 16.5).

Side pulls

Side pulls are performed by reaching both hands across to the far side of the client's trunk or limb. One hand glides toward the midline of the trunk or limb while the other hand begins the same action when the first hand is halfway through its stroke (see Figure 16.6).The therapist can use their body weight to assist with the depth of the technique by leaning back into the technique as the hands move across the sides of the body toward the midline. This technique is unusual in the sense that the direction of the technique requires the therapist to pull back toward them rather than pushing the technique forward with their body weight behind them.

Nerve strokes (light stroking)

Nerve strokes (also known as cat or feather strokes) are a light stroking technique that is performed slowly with light pressure, using the fingertips. The fingertips stroke down the area of the body being treated in a continuous alternating pattern (see Figure 16.7). This stroke is generally added as the final technique in a sequence as it is the lightest of the effleurage techniques and is a gentle and soothing way to complete an area of the body.

Figure 16.6 Side pulls

Figure 16.7 Nerve strokes

Pétrissage

Definition

Pétrissage is a group of techniques that repetitively lift, roll, grasp, stretch, compress or squeeze the underlying tissue.

Pétrissage is derived from the French verb *pétrir* meaning 'to knead'. The intention when performing pétrissage manipulations is to lift and squeeze (or 'milk') or compress the tissue. When performing pétrissage, the therapist lifts, rolls, stretches, compresses, kneads or squeezes the underlying tissue or structures between their hands (Salvo 2003). Some authors equally refer to this manipulation as kneading (Fritz 2000; Rechtian et al 1998). Pétrissage consists of several techniques; namely, kneading, squeezing, lifting, compression and skin rolling (De Domenico & Wood 1997; Cassar 1999; Loving 1999). Some texts add shaking (Holey & Cook 1997; Hollis 1998) whilst others exclude compression (Rattray & Ludwig 2000; Salvo 2003).

Description

There are many pétrissage manipulations and, as previously mentioned, they involve lifting, rolling, stretching, compressing, squeezing or kneading underlying tissues. Each technique has its own unique action and its own effect.

The most common pétrissage attribute is known as kneading. This attribute is much like the kneading of bread dough. One or both hands compress, lift and twist the muscles and subcutaneous tissues, often in an alternating fashion. Pétrissage techniques involve the use of the whole hand, as the entire palmar surface, the fingers and the thumb, as well as the tips of every digit are recruited. With practice, the therapist will find it is easier to grasp the tissue when kneading is performed slowly (allowing approximately 2–3 seconds for every pétrissage stroke). As proficiency increases, the therapist can begin to use a more rapid kneading action to produce a stimulating effect on the nervous system. Chaitow and DeLany (2000) recommend the kneading technique rhythm be delivered at around 10–15 cycles per minute for relaxation or around 35 cycles per minute for stimulation.

Pétrissage is said to encourage peripheral blood flow, and may assist with the resolution of oedema. It may be useful in situations of abnormal muscle contracture or soft tissue adhesions (Liston 1995). Through muscular lengthening and relaxation, pétrissage manipulations may assist painful conditions and relieve muscular fatigue (Chaitow & DeLany 2000; Salvo 2003).

Techniques

There are many variations of pétrissage — each having its unique movement and employing the hands in differing ways. Despite the altered dynamics, the unique kneading motion of pétrissage manipulations remains a constant.

C-scoop kneading

The hands are placed on the surface of the skin with thumbs and fingers separated, creating a 'C' shape. The hands alternately glide back and forth grasping and picking up and squeezing the muscle between the fingers and thumbs. This two-handed technique can be performed on all large surface areas such as calves, thighs, back and abdomen. For smaller surface areas, such as the arms, a single-hand technique can be performed (see Figure 16.8).

Circular kneading

Circular kneading is comprised of circular motions synchronised with compression. Performed with one or both hands, circular kneading consists of short rhythmic circular movements of the finger pads, thumbs, palms or forearms. If both hands are used the technique may be performed either simultaneously or with alternating movements. During the technique the pressure increases to peak mid-way, then with pressure reducing to complete the stroke. This technique can be performed stationary on a large surface area (such as using the thumbs to knead the calf muscles) or can travel during the movement to cover the entire tissue with small circles (see Figures 16.9 and 16.10).

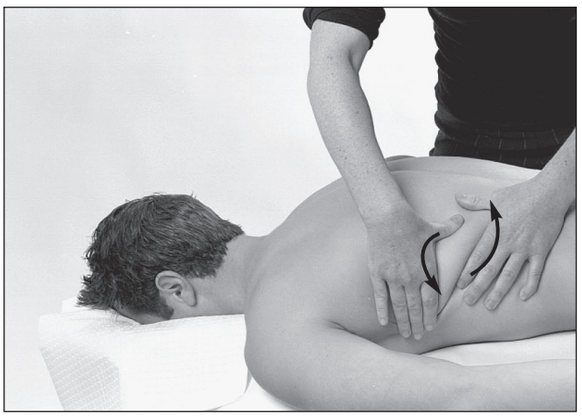

Figure 16.8 C-scoop kneading

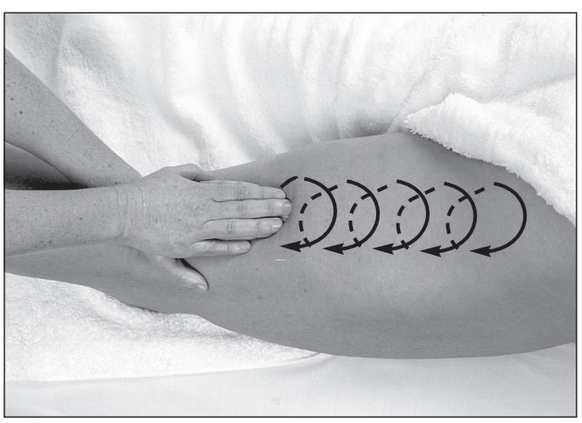

Figure 16.9 Reinforced circular finger kneading

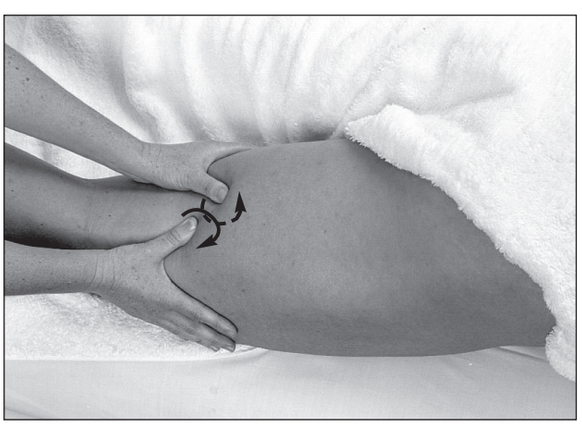

Figure 16.10 Alternating circular thumb kneading

Squeezing

This is a non-gliding technique that can be applied equally well directly to the skin or through clothing or draping covering the skin. One or both hands grasp, lift and squeeze the muscle or muscle group. The hands then relax and, whilst maintaining skin contact, glide slightly along the limb, where the technique is repeated (see Figure 16.11). For smaller or individual muscles, squeezing may be performed using the thumb and fingers. This technique is also known as pincer-grasp compressions (see Figure 16.12).

Figure 16.11 Squeezing the arms

Figure 16.12 Squeezing the trapezius muscle

Wringing

Wringing is performed with the therapist facing the body from the side of the massage table. Each hand is placed on either side of the trunk or limb being massaged. The hands simultaneously glide, lift and shear between the muscles as they pass each other moving from one side of the body to the other in opposite directions (see Figures 16.13 and 16.14).

Skin rolling

Skin rolling is a pétrissage technique that is used for assessment and treatment. It can be used to assess the mobility of the superficial fascia. Restricted superficial fascia is noted where the skin is difficult to lift off the underlying tissue. It may be an indication of problems such as underlying connective tissue or joint dysfunction (Fritz 2000). As a treatment technique skin rolling improves the mobility of the superficial fascia and, indirectly through its attachments to the deeper structures, may influence motion at a deeper level (Andrade & Clifford 2001). This involves a pincer-like grip that places the thumb and forefinger (in the shape of a 'C') on the skin, then using a rolling action the finger and

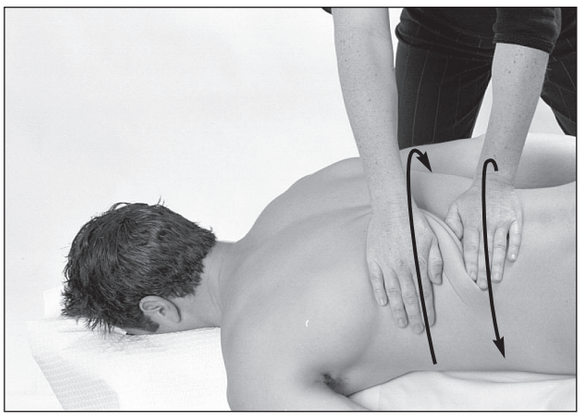

Figure 16.13 Wringing the mid back

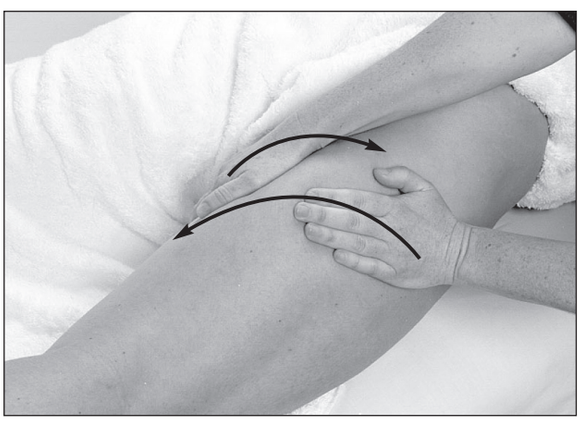

Figure 16.14 Wringing the thigh

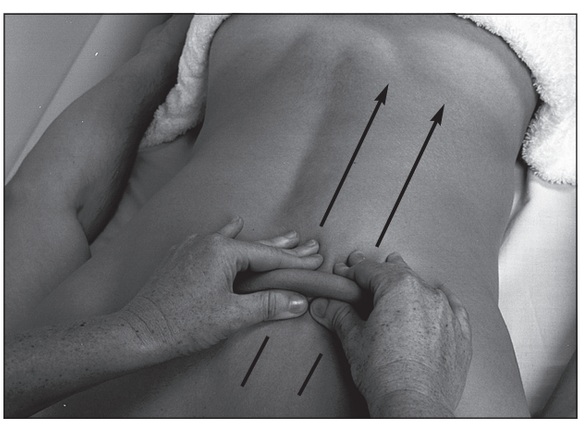

Figure 16.15 Skin rolling

thumb lift the skin to loosen it from the subcutaneous tissue (see Figure 16.15).

Compression

According to some authors, compression has been developed into a distinct manipulation (Fritz 2000; Salvo 1999). Fritz (2000) classifies compression as a Swedish massage technique whereas Salvo (1999) and Rattray and Ludwig (2000) classify compression as an ancillary or non-Swedish massage technique. Dr James Mennell (1920; refer Chapter 2) classifies both pétrissage and friction manipulations as compression techniques. Because most massage manipulations involve an element of compressive force and therefore constitute a compression technique, a separate compression category may be deemed unnecessary.

There are two types of compression used in massage — broad compression and specific compression. *Broad compression* is a non-gliding technique, using a broad surface such as the palm or fist, applied perpendicular to the muscle belly (Fritz 2000; Salvo 1999).

Applied manual components of compression would be 'pressing' or 'pushing', squeezing' or 'pinching' and 'twisting and 'wringing'.

Pressing is bearing down, applying pressure to or putting weight upon. Pushing is moving something aside, away or ahead by pressure or contact. Squeezing is compressing an object, especially between two forces, closing or tightly pressing together. Twisting is using various turning motions on a body. Wringing is compressing while twisting or squeezing (Burman & Freidland 2006).

A practitioner might press up against a fluid vessel, thus occluding it, blocking its flow. Pushing the same structure would move the flow forward, encouraging a draining effect. Compression can be used as an assessment tool to examine and determine soft tissue resilience, hardness, the ability of the tissue to yield, or the strength, tension, and mobility of various tissues (Burman & Freidland 2006). When applied to myofascia, adjustment in pressure and force is necessary due to the physical and autonomic properties of myofascial tissue.

The manual application of force through compression effects change in the physical properties of the myofascia tissue, with subsequent softening of the tissue and increased mobility (Schleip 2003).

Compression is often used as an introductory stroke that can assess the level of tension present within the tissues and occasionally the depth of the tension. It is also believed that broad compression has effects on circulation, muscle resting tension, and rib cage mobility. Gentle broad compressions are used over the lymphatic nodes in manual lymph drainage to encourage lymphatic flow (Casley-Smith 1997). An osteopathic model of lymphatic drainage also uses gentle compression over the ribs and in pre-event sports massage, as no oil is required, and can be performed through clothing. Broad compressions may increase or stimulate muscle tone and stimulate arousal and therefore will benefit the athlete preparing for sport (Loving 1999; Fritz 2000). Broad compressions are often used in conjunction with rocking manipulations and therefore have a combined effect (see 'rocking vibration' later in this chapter).

The hands, the flat of the fists or forearm are applied over a broad contact region. Perpendicular pressure is slowly applied to the tissue, sustained and then gradually released. For a more stimulating effect the therapist completes the technique more vigorously (see Figures 16.16 to 16.18).

Specific compressions are a non-gliding technique using a specific surface such as the thumbs, knuckles or elbow and applied perpendicular to a particular surface, such as muscle, tendon or connective tissue (Andrade & Clifford 2001). Specific compressions are used in many massage modalities such as shiatsu, oriental massage, trigger-point therapy and myofascial release techniques.

The degree of pressure depends on the varying density and tension within the tissues being compressed and the intention of the application. It is important to meet and match tissue tension to effectively dissipate force along lines of least resistance (Burman & Friedland 2006).

Specific compression in the form known as trigger-point pressure release is an effective treatment of myofascial trigger points (see Box 16.1) (Simons, Travell & Simons 1999). Trigger-point pressure release is normally applied to lengthened muscle and then gentle, gradual pressure is applied to the trigger point until tissue resistance is met. The client may feel some discomfort but not pain. A pain scale such as the visual analogue scale (see Chapter 17) may be used to ensure the pressure of the technique is not excessive. Once the barrier slackens off, additional pressure may be added until a new barrier is reached (see Figures 16.19 and 16.20). As this technique may cause some discomfort, it is often interchanged temporarily with pétrissage or effleurage techniques.

Figure 16.16 Broad compression using the flat of the fist over the hamstring

Figure 16.17 Broad compression using the forearm on the buttocks

Figure 16.18 Broad compression using the forearm on the trapezius muscle

Figure 16.19 Specific compression to piriformis muscle

Figure 16.20 Specific compressions to trapezius muscle

Box 16.1 Myofascial trigger points

Definition: A hyperirritable spot in skeletal muscle that is associated with a hypersensitive, palpable nodule in a taut band. The spot is painful on compression and can give rise to referred pain, referred tenderness, motor dysfunction and autonomic phenomena (Travell & Simons 1999).
Types of myofascial trigger points:

- active — a clinical pain complaint where the pain refers in a characteristic pattern
- latent — a clinically silent trigger point that only responds in a characteristic pattern on palpation
- central — located near the centre of the muscle at the motor end plates
- attachment — located at the musculotendinous junction or at the enthesis as a result of unrelenting tension of the taut band produced by the central trigger point
- primary — the muscle develops a trigger point due to its overuse
- key — responsible for activating satellite trigger points
- satellite — activated neurogenically or mechanically by the key trigger point.

Tapôtement

Definition

Tapôtement is a repeated, rhythmical, percussive firm-striking manipulation of the superficial and/or deep tissues that is followed by a quick rebound. Burman and Friedland (2006) consider it to have an oscillation component as it includes vibration with percussive 'striking'.

Tapôtement is derived from the French verb *tapôter* meaning 'to tap'. Many texts also equally refer to this manipulation as percussion (Andrade & Clifford 2001; Fritz 2000; Cassar 1999; Mennell 1920).

Description

Just like playing a percussion instrument such as a leather-skin drum, the hands apply a rhythm or beat to the body. Such percussive rhythms may be applied using the palms, ulnar surface of the hands, the fists or even 'cupped' hands. The hands usually strike the body alternately, and the elbow performs small bending and straightening movements whilst the wrists are kept relaxed throughout the movement. When performing these techniques, ensure excessive movement does not occur at the wrists, as this may lead to wrist strain. The repeated striking of the tissue with percussive strokes serves to stimulate the underlying tissue, yet also induces a reflexive response on the whole body.

From a physical energy point of view this type of stroke generates 'wave' activity through the tissue. The amount of applied force can send very small or very large wave activity through the soft tissue. Tapôtement manipulations are effective for nervous stimulation, and may enliven or increase the alertness of the recipient. Such techniques are often employed during short-duration massage treatments, such as those performed in a seated massage or with an athlete prior to competition.

When applied to bony attachments and joint areas, a soft to moderately firm strike with the rounded ulnar part of the hand can break strong capsular or ligamentous adhesions.

Traditionally known for its stimulating effect, tapôtement manipulations are often omitted during a relaxation massage sequence. However, when invigorating or attempting to awaken a client from a deep state of relaxation, light superficial tapôtement could be employed. The beginning massage student will enjoy practicing this highly effective and entertaining manipulation, considered the showpiece of Swedish massage.

Techniques

There are six main types of percussive strokes that may be applied with varying depth of pressure. These are hacking, striking, pummelling, cupping, plucking and tapping.

Hacking

Hacking is performed with loosely spread fingers. After striking the skin the fingers cascade together but only the side of the little finger and the tips of the third and fourth fingers make actual contact with the tissue. The fingers quickly rebound off the tissue rather than landing heavily. This technique is usually performed in a quick and rhythmic alternating fashion (see Figure 16.21). The therapist should avoid a chopping action where the side of the hand rather than the fingers land heavily on the body.

Striking

Striking is applying intermittent or broken contact ranging from light to penetrating. It is a form of hacking, but can be done with the fingertips or a rounded soft fist. Often it can be used as a bony version of a 'hammer' striking at a prescribed bony location with just one strike. Striking is effective in eliciting a 'tendon reflex' such as one strike to the patellar tendon.

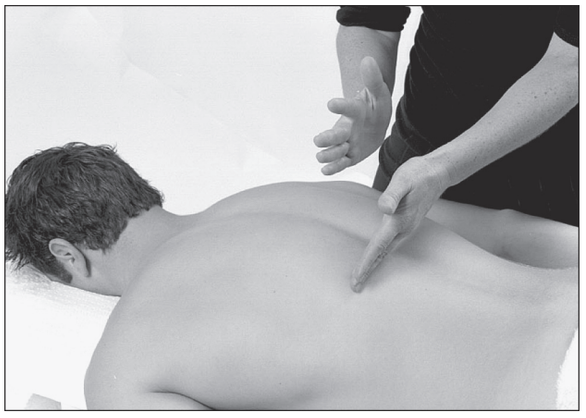

Figure 16.21 Hacking

Pummelling

Pummelling, also known as pounding, has a similar movement to hacking — again the ulnar surface of the fingers and hands are used. The technique is performed with loose alternating fists that strike and rebound off the tissues (see Figure 16.22).

A variation of pummelling is called beating. It has an identical action to pummelling. Alternating between the left and right hands, this technique is performed with lightly closed fists and palms facing down. The therapist strikes and rebounds off the tissues.

Cupping

Cupping is performed with cupped hands, formed by holding the fingers and thumb close together with the fingers and palm curving to allow the hand to form a hollow. When the hand strikes the tissue only the edges of the 'cup' come into contact. Upon lifting the hand from the skin, a vacuum is created. This technique is usually performed on broad surfaces such as the back or thigh. It is also the stroke of choice for loosening mucous and phlegm from the respiratory system and is applied over the lung area of the back. This stroke is performed with rhythmic alternating hands (see Figure. 16.23).

A variation to cupping is known as slapping. Slapping is performed with an open palm and fingers, creating a loud smacking sound when it strikes the skin. This technique is performed on broad surfaces such as the back and thigh or tough surfaces such as the soles of the feet. Again this technique uses quick rhythmic alternating strokes.

Plucking

Plucking, also known as pecking or pincement, is a light and springy technique where the superficial tissues are picked up between the thumb and first two fingers. The fingers and thumb glide over the tissues until they come together. This technique is performed as a rapid, gentle and rhythmic stroke alternating between the left and right hands (see Figure 16.24).

Tapping

Tapping is applied with slightly bent fingers allowing the fingertips to 'tap' the tissue. Again a rhythmic alternating stroke is used. Tapping is the lightest and most superficial tapôtement technique. It can be used on delicate and sensitive areas such as the face, chest and arms (see Figure 16.25).

Precautions

The use of tapôtement requires a suitable amount of clinical training and supervised practice to ensure its correct application. More advanced or specialist training

Figure 16.22 Pummelling

Figure 16.24 Plucking

Figure 16.23 Cupping

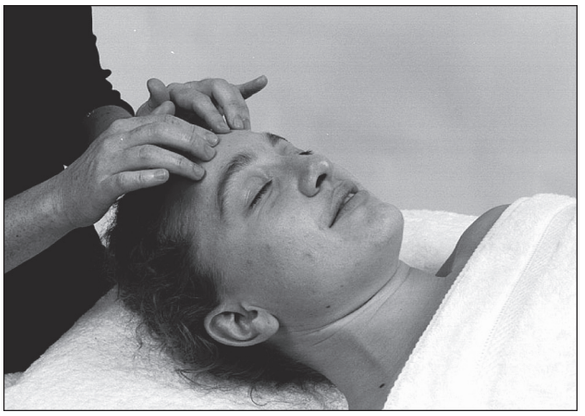

Figure 16.25 Tapping

is needed for those wishing to use tapôtement manipulation for mucus clearance, and for use with specific pathologies. When applying tapôtement, all absolute contraindications as noted in Chapter 12 should be adhered to, as well as those discussed below.

Tapôtement should not cause the client pain or discomfort; post-treatment erythema (reddening of the skin) and client discomfort is considered poor application of technique (Andrade & Clifford 2001). To prevent discomfort or irritation of the skin, use a barrier such as a towel, sheet or even clothing between the therapist's hands and the client's skin (Kisner & Colby 2002; Salvo 1999; De Domenico & Wood 1997; Holey & Cook 1997).

Tapôtement is locally contraindicated during the early stages of injury repair as it may further damage the tissues involved or affect the formation of scar tissue (De Domenico & Wood 1997). Tapôtement should not be used over bony areas such as the head, neck, back of the knee, or on the spine (Cassar 1999).

Tapôtement should be used with caution or avoided altogether over areas where muscle bulk is lacking, such as the kidney area, and over the lower and floating ribs. Caution should also be used on areas of hypersensitivity (Cassar 1999; De Domenico & Wood 1997).

Friction

Definition

Friction is a specific, repetitive, non-gliding technique where superficial tissues are moved over the underlying structures with the purpose of improving tissue mobility, increasing local blood flow and decreasing pain.

According to Turchaninov (2000), Hippocrates was the first author to describe friction manipulations and the guidelines for application. Claudius Galen (AD 130–199) used a system of friction manipulations as a doctor at a gladiator school (see Chapter 2) to prepare and/or rehabilitate injured gladiators. The term friction is derived from the Latin term *fricto*, meaning 'to rub'.

The aim of friction manipulations is to mobilise the superficial tissues over the underlying structures for the purpose of improving mobility (Simons, Travell & Simons 1999), increasing local blood flow (Cyriax 1984) and decreasing pain (De Bruijn 1984). Friction manipulations commence superficially and progress more deeply, affecting muscular and fascial tissues (Salvo 1999). The way in which such rubbing strokes are applied will greatly alter their effectiveness.

Another way to view the use of friction technique is as if it is a blunt or pointed knife in your sculpting toolbox. The purpose is to penetrate, to tear apart or break adhesions beneath the superficial tissues whose effect will be to increase mobility of the adjacent structures. Because friction techniques are locally penetrating, awareness and negotiation with the client about increased sensation, pain and nervous system response, such as guarding, flinching or tightening of soft tissue structures, is necessary. Communication and dialogue are additional essential components to the successful application of friction technique.

Description

Friction manipulations are most commonly performed in a linear or circular fashion. Such strokes may be applied with the fingertips, palms, knuckles, the forearm or even the elbow. Friction manipulations are usually administered over defined, local areas of tissue, and are often used to relieve a contraction in a muscle and reduce pain. Such relaxation of musculature will encourage the lengthening of the tissue, and lead to enhanced movement. Some therapists employ friction strokes during the rehabilitation of injuries to facilitate the proper parallel alignment of collagen during the repair process.

Techniques

It is imperative that when performing friction manipulations with the intent of penetrating deeper tissue, one must progress slowly. When practicing friction strokes, it is important to reduce the depth and pressure if the recipient counteracts the technique with a 'muscular guard response'. By progressing slowly, the sensory receptors within the soft tissue of the recipient will have time to adjust to the pressure and depth, and will be less prone to responding via muscular contraction for protection. The type of friction manipulations the therapist chooses will depend on the situation at hand and the therapist's preference for style.

Linear friction

Linear or longitudinal friction is usually done in a straight line along with the direction of muscle fibres. If done on the surface, linear frictions can be done to generate heat, as in heat rubbing. If done to penetrate more deeply into tissue, friction moves along as the resistance of tissue is met and yields. Linear friction is usually applied with reinforced fingers and thumbs, or the palms of the hands. If done more deeply, the therapist will use their elbow (see Figure 16.26).

Circular friction

Circular friction is performed with the tips of the middle three fingers or the thumb. It is important for therapists to always reinforce their hands when applying this

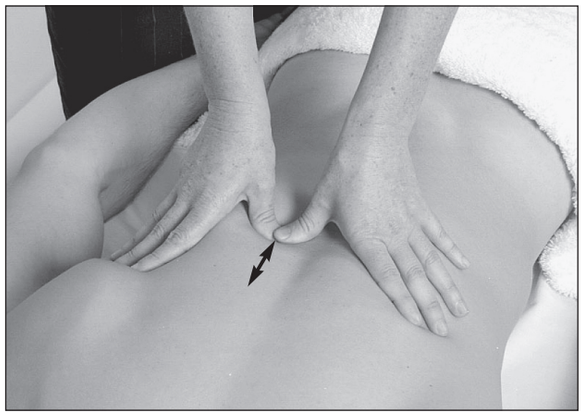

Figure 16.26 Linear frictions

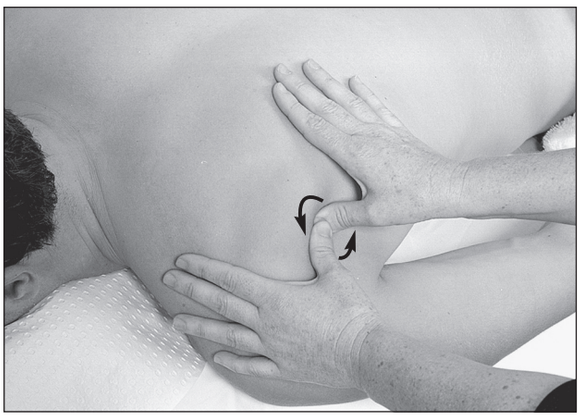

Figure 16.27 Reinforced circular frictions

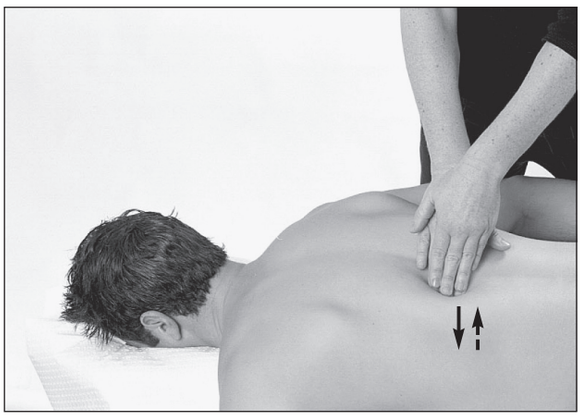

Figure 16.28 Transverse frictions to the paravertebral muscles

technique. Apply obliquely into tissue with slow movement at the beginning and, moving in circles, increasing depth with each successive movement. When the desired depth is reached, the therapist gradually decreases pressure and uses an effleurage stroke to move to the next area to be treated (see Figure 16.27).

Transverse or cross-fibre friction

James Cyriax (1904–1985) commonly regarded as the father of orthopaedic medicine, popularised transverse or cross-fibre friction. He advocated the use of this manipulation in the treatment of musculoskeletal conditions such as sprains, strains and tendonitis. Cross-fibre friction can be administered slowly or vigorously in a one-directional sawing 'back and forth' motion to eventually break down, separate and numb the affected tissue or structure. Such a technique can be very painful to the person receiving it, and therefore caution must be used when delivering this technique (see Figures 16.28 to 16.30).

Cyriax insisted that this technique be applied using the following principles:

- The exact location of tissue dysfunction must be found.
- Friction manipulations are performed at a right-angle to the length of the muscle or structure involved.
- The therapist's fingers and client's skin move as one.
- The technique must be deep enough and have enough movement to directly affect the specified tissue.
- The client must be in a comfortable position (Chamberlain 1982; Cyriax 1984).

In Figure 16.30 the therapist begins with deep local compression on the hamstring muscle. The therapist then medially and laterally rotates the femur, creating transverse friction between elbow and the tissue. The therapist's elbow compresses the tissue and then rotates the joint so that the transverse movement occurs through passive client movement rather than therapist movement.

Figure 16.29 Transverse frictions over the superior gluteal insertions

Figure 16.30 Alternative method of transverse friction to the hamstring muscles

Precautions

The use of friction manipulations requires a suitable amount of clinical training and supervised practice to ensure their correct application. More advanced or specialist training is needed for those wishing to use friction manipulations for the treatment of tendonitis,

sprains and other specific pathologies. When applying friction all absolute contraindications as noted in Chapter 12 should be adhered to, as well as the following:

- Friction manipulations should not be used on acutely inflamed tissue, where acute signs and symptoms such as heat, redness, pain, spasm and oedema should be resolved before its application (Hammer 1999; Hertling & Kessler 1996).
- Friction manipulations should be avoided over acute muscle tears, haematomas, calcifications and peripheral nerves (Hammer 1999).
- Caution should be used when applying friction manipulations to the tissues of unstable joints as this may exacerbate the condition (Andrade & Clifford 2001). Caution should also be used when treating clients with osteoporosis; deep techniques may damage the potentially weak bone.

Vibrations

Definition

Vibrations are a group of techniques that consist of rhythmic manipulations of the soft tissues. The rhythmic manipulation has a unique pattern of oscillation, and this pattern depends upon the type of applied vibration delivered, and has a 'vibratory' signature. This signature can be quick, light and rapid, or slow, heavy and coarse.

'Oscillation skills link us with vibratory waves that animate the body and all its systems' (Burman & Friedland 2006). Vibration initiates reverberation, ripple and rebound effects within the body. Tracing and tracking the patterns of these waves is one approach to bringing balance and homeostasis to the body systems.

Vibration manipulations encompass a collection of strokes that include vibration, rocking, shaking and jostling. Such movements are rhythmic and trembling or oscillating in nature, and may be applied by using the whole hand, the fingertips or even a mechanical device. Vibration manipulations differ from tapôtement strokes in that the hands do not usually break contact with the skin, with the exception of the 'rocking' technique. As simple as they may sound, vibration manipulations are one of the most physically challenging strokes a massage therapist can perform. When performed skilfully, through much practice, vibration strokes are useful for inducing a sense of relaxation.

Description

All vibration manipulations commence with some degree of compression. After a desired depth of compression is achieved, the hands tremble or oscillate, thus transmitting a 'vibration' into the underlying tissues. Such manipulations are often employed as distraction techniques for the suppression of pain. Turchaninov (2000) believes vibratory techniques are useful for nervous system dysfunctions, such as cerebrovascular accidents (or strokes). It is said that the application of gentle vibration manipulations may aid recovery from conditions such as stroke, as it may improve motor function (Turchaninov 2000).

Techniques

There are three groups of vibrations; namely, static and dynamic, rocking, and shaking. Each of these groups may have many variants. A few will be described here.

Static and dynamic vibration

Vibration techniques can be performed statically or with movement, either using a single hand or reinforced hands. The muscles of the forearm alternately contract and relax, creating a rhythmic movement transmitted through the hand onto the tissue treated (see Figure 16.31).

Shaking vibration

Shaking is very effective with clients who have the propensity to muscle guard. With limb shaking there is a lift and pull component to the technique. A muscle group or limb is grasped, lifted and shaken. The shake can be up and down or side to side. Attempt to shake with a sense of rhythm, and attempt to feel how much resistance there is in the limb. Feel the weight of the limb, apply a slight traction with coarse shaking and after the application feel the difference in the limb (see Figure 16.32).

Figure 16.31 Static vibrations

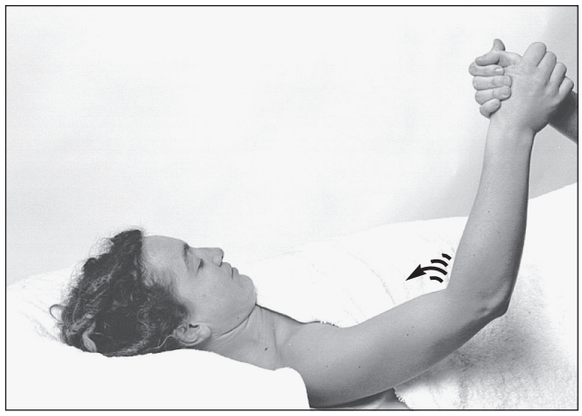

Figure 16.32 Shaking vibrations

Figure 16.33 Rocking vibrations

Rocking vibration

Rocking is a popular form of vibration. It is gentle and once the therapist achieves a desired rhythm, it lulls the client into deep relaxation. Rocking is rhythmic and should be applied with a deliberate full-body motion. Rocking involves the up-and-down and side-to-side motion of shaking, but no flick or throw-off occurs at the end of the movement. The action moves the body as far as it will go, allowing it to return to its original position (see Figure 16.33).

With a tense or anxious client who may initially resist the rocking movement, begin with more deliberate shaking vibration and then move in to rocking vibration. Attempt to find a movement that is flowing, and avoid anything abrupt.

Precautions

The use of vibration techniques requires a suitable amount of clinical training and supervised practice to ensure its correct application. More advanced or specialist training is needed for those wishing to use these manipulations for mucus clearance, and for use with specific pathologies. When applying vibrations, shaking and rocking, all absolute contraindications as noted in Chapter 12 should be adhered to, as well as the following:

- Vibration and shaking should be avoided on any muscle that contains an acute injury. However, light vibration may be used for pain relief provided caution is taken during its application to ensure that the weight of the hand does not aggravate the pain (Andrade & Clifford 2001).
- Shaking and vibrations may exacerbate spasm, spasticity or hyperreflexia when applied to a client exhibiting these signs (De Domenico & Wood 1997; Rattray & Ludwig 2000).
- Rocking should be used with caution on clients with reduced motion or where pain aggravates movement. Fast or abrupt rocking may cause nausea, and should not be used on clients suffering from vertigo or motion sickness (Andrade & Clifford 2001).

THE SCIENCE BEHIND TECHNIQUE: PHYSIOLOGICAL EFFECTS OF THE SWEDISH MASSAGE TECHNIQUES

There is much written on the claimed effects of the major Swedish massage strokes. A beginning massage therapist might be led to believe that all strokes potentially share the same therapeutic capabilities, as the reputed benefits of the major massage manipulations are great, and in many instances such usage and effects overlap for each stroke.

The purpose of this section is to critically analyse some of the claimed effects of the major massage manipulations, and contrast such beliefs with theories supported by research investigating the effects of massage manipulations. Although the application of massage has been observed in clinical practice and benefits of massage such as pain reduction and enhanced circulation have been noted, the underlying mechanical or physiological mechanisms for such benefits are not understood. As such, the effects of massage are poorly described and at best unclear. The so-called purported effects are presented here for the purposes of stimulating review and academic debate.

Effleurage

According to many of the popular massage books, effleurage strokes are capable of enhancing blood and lymph circulation, inducing relaxation, improving the quality of sleep, reducing the pain experience, uplifting mood and reducing abnormal muscle contraction (Salvo 2003; Fritz 2000; De Domenico & Wood 1997; Tappan & Benjamin 1998). Despite these claims there exists little research to validate such claimed effects of effleurage. Much of the research investigating the effects of effleurage centres on what are referred to as ‘superficial stroking’ and ‘effleurage’.

Superficial stroking is reported to stimulate and relax mood, relieve anxiety, reduce resting muscle tension and facilitate regression of sensory analgesia (Hollis 1998; De Domenico & Wood 1997; Holey & Cook, 1997). As previously described, stroking is often used as an introductory or closing technique during a massage routine (Rattray & Ludwig 2000). Its effect on arousal is reportedly dependent upon the speed of the stroke: a slow stroke may have a more relaxing effect whereas a fast stroke tends to stimulate (De Domenico & Wood 1997).

One particular use of superficial stroking is known as the slow-stroke back massage (SSBM). The SSBM is a specific nursing protocol which consists of slow, gentle, rhythmical strokes using two hands simultaneously over the client approximately 5 cm out from the spine, from the crown of the head to the sacral area, and has been used in nursing since the mid-1960s (Holland & Pokorny 2001). Several studies have used SSBM and have found it to be a successful nursing intervention for promoting relaxation and thus promoting sleep (Holland & Pokorny 2001; Labyak & Metzger 1997; Meek 1993; Fakouri & Jones 1987).

Fakouri and Jones (1987) examined the effectiveness of SSBM in promoting relaxation. The researchers measured blood pressure, heart rate and skin temperature prior to and immediately after a 3-minute SSBM. Heart rate and skin temperature were again measured 10 minutes post-treatment. According to the data collected, blood pressure and heart rate decreased with the application of SSBM, whilst skin temperature increased. According to the authors, the findings from this study suggest that SSBM promotes relaxation.

Similar results were recorded by Meek (1993) who investigated the effects of SSBM on systolic and diastolic blood pressure, heart rate and skin temperature in a population of 30 adult hospice patients. Results showed that blood pressure and heart rate decreased and skin temperature increased for 5 minutes after the treatment, suggesting that SSBM promotes relaxation.

Holland and Pokorny (2001) examined the effects of 3 consecutive days of SSBM on adult patients in a rehabilitation setting. Blood pressure, pulse and respiratory rates were assessed immediately prior to and post-treatment. The scores were reduced over the 3 days of treatment, indicating a positive response to SSBM. The authors noted a significant decrease in blood pressure and heart rate, and concluded that SSBM induced relaxation.

Rowe and Alfred (1999) investigated the effects of slow-stroke massage on the agitation behaviours of individuals with Alzheimer's disease. The Agitated Behavior Rating Scale Scoring Guide (ABRSSG) was used by caregivers to record all agitated events such as pacing, walking, tapping, banging, searching and wandering. The findings from this study showed that physical expressions of agitation were decreased when patients received slow-stroke massage, suggesting that slow-stroke massage is a useful relaxation intervention to reduce agitation in adult hospice patients.

It has long been postulated that light touch has the effect of modulating pain. As theorised by Melzack and Wall (1965), the application of light stroking irritates pressure and touch receptors and in some way affects nerve conduction and reduces messages of pain going to the central nervous system. Although theorised, the exact mechanism underlying the gate-control theory is not well understood (Rechtien et al 1998; Hertling & Kessler 1996).

Ueda, Katatoka and Sagara (1993) examined the effect of gentle epigastric massage on the regression of the sensory analgesia of epidural block. Superficial stroking was performed on 16 patients who had undergone minor obstetric or gynaecological surgery under epidural anaesthetic. The patients were divided into two groups, a control group that received no stimulation and an experimental group that received 30 minutes of gentle stroking to the epigastric region. The authors noted that stimulation as weak as superficial stroking caused significant regression of sensory analgesia approximately 30 minutes after the massage. The authors concluded that gentle massage of the epigastric region might reduce the effect of analgesia by accelerating the removal of analgesic medication from the system, and proposed that this could occur due to an increase in blood flow.

Like superficial stroking, superficial effleurage is an adaptable massage manipulation that is known for its circulatory effects. In the massage literature, superficial effleurage has been reported to assist in venous and lymphatic return (Hollis 1998; Loving 1999; Tappan & Benjamin 1998). Despite these claims, some studies suggest that effleurage has little or no effect on increasing venous return (Shoemaker, Tiidus & Mader 1997; Tiidus & Shoemaker 1995; Hansen & Kristensen 1973).

In an early study, Hansen and Kristensen (1973) evaluated the effects of massage on Xenon (Xe) disappearance rate from muscles and subcutaneous tissue. Twelve healthy subjects were injected with Xe (a washout marker) into the right calf and in the subcutaneous tissue of the left calf. Effleurage, short-wave diathermy and ultrasound were applied in random order for 5 minutes each. The authors found that during the massage period Xe clearance in muscle increased, suggesting that massage enhanced circulation.

Specific massage of the lymphatic system is referred to as manual lymph drainage (MLD). MLD is designed to stimulate the lymphatic system by clearing oedema in the tissue spaces, increase uptake of the initial lymphatics and increase lymphatic flow throughout the system (Mason 1993). Superficial effleurage is often part of MLD and is used to remove oedema and assist with the drainage of lymph through its system (Mason 1993). External compression on the lymphatic vessels, such as massage, has been shown to increase peripheral lymphatic pressure and drain the lymphatic vessels of the limbs (Schmid-Schönbein 1990).

Secretory immunity is part of the first-line defence against invading microorganisms. It has been suggested that stress may cause immunosuppressance, thus increasing the risk of infection (Jemmott & McClelland 1989). Groër et al (1994) assessed the effects of a 10-minute nursing back rub (effleurage) on salivary secretory immunoglobulin A (s-IgA) and anxiety in well older adult subjects. The Spielberger State/Trait Anxiety Inventory (STAI) was used pre- and post-test to measure the level of anxiety. A saliva sample was also collected pre- and post-test to examine the levels of the s-IgA. Two groups were formed — a control group (n=14) who rested on a bed for 10 minutes and an experimental group (n=18) who received a 10 minute effleurage-based massage. Salivary secretory immunoglobulin A was found to significantly increase in the experimental group, suggesting that effleurage elevates immune function and assists in reducing stress.

Several authors claim that effleurage may have the ability to reduce muscle tone (Holey & Cook 1997; Cassar 1999). Sullivan et al (1993) examined the effects of effleurage on H-reflex amplitude to the triceps surae in 16 neurologically healthy subjects. The H-reflex or Hoffman reflex is an indirect measure of motor-neuron excitability (Hollis 1998). Effleurage was applied to the belly of the triceps surae in a centripetal direction over a distance

of 20–25 cm for 3 minutes. H-reflex recordings were obtained from the left triceps surae muscle using two disposable surface electrodes and were recorded pre-, during and post-treatment. The authors found a mean reduction in H-reflex amplitude of 25% during the massage, suggesting that effleurage may induce muscle relaxation when applied to a healthy muscle (see Table 16.1).

Pétrissage

The claimed effects of pétrissage are wide and varied. Such purported effects include enhanced blood flow, increased lymphatic return, removal of chemical irritants, increased connective tissue extensibility, reduced local swelling, recovery from general fatigue, muscle relaxation, reduced muscle soreness and reduced pain (Salvo 2003; Fritz 2000; Tappan & Benjamin 1998; Holey & Cook 1997; De Domenico & Wood 1997). An exhaustive search of the research in this area uncovered very little evidence to substantiate such claims.

For example, it is often considered that pétrissage improves both lymph and blood flow. In clinical practice pétrissage techniques such as gentle kneading and compressions are often included in manual lymph drainage due to supposed effects on enhancing circulation. As such, authors suggest that pétrissage may enhance lymphatic return (Mason 1993; Wallace et al 2003). Despite the existence of data to support the effects of mechanical pétrissage (Yamazaki et al 1988), no studies were found to support the use of pétrissage manipulations to improve lymph flow.

In relation to the effects of pétrissage on blood flow, studies exist that are contrary to the beliefs of popular massage texts. Hovind and Nielsen (1974) investigated the effects of pétrissage on blood flow in skeletal muscle of the forearm and thigh, using a xenon washout method for determining blood flow. The findings from this study showed that pétrissage had little effect when it came to increasing tissue perfusion of Xenon. As such the authors concluded that pétrissage had no effect on increasing blood flow in skeletal muscle of the forearm and thigh. A study conducted by Shoemaker, Tiidus and Mader (1997), using a Doppler ultrasound to measure blood flow, also concluded that pétrissage had no effect on increasing blood flow.

Based on these findings, it would appear unlikely that pétrissage enhances lymph or blood circulation. To validate the use of such techniques in clinical practice, further investigation is required to confirm the effects observed by therapists in the clinical setting.

Research does exist to validate the use of pétrissage techniques for reducing muscle tone via a reduction in moto-neuron excitability in both neurologically healthy subjects as well as patients with spinal cord injury (Sullivan et al 1991; Morelli et al 1991; Goldberg et al 1994). Such investigations have been conducted by physical therapists, with a special interest in identifying the effectiveness of pétrissage for reducing muscle tone in spastic muscles. It is argued that a lack of evidence to validate the effects of pétrissage in other areas and for other conditions does not necessarily correlate to a lack of effect on the part of pétrissage itself, but rather a lack

Table 16.1 Summary of the reported effects of effleurage manipulations

	SUPERFICIAL STROKING				SUPERFICIAL EFFLEURAGE			
	Suggested by research	Likely	Questionable	Unlikely	Supported by research	Likely	Questionable	Unlikely
Induces relaxation	●							
Improves the quality of sleep	●							
Uplifts mood		●				●		
Increases arousal		●				●		
Relieves anxiety		●				●		
Enhances blood flow		●					●	
Enhances lymphatic flow		●				●		
Reduces oedema		●				●		
Induces muscle relaxation				●	●			
Relieves pain		●				●		
Elevates immune function					●			
Reduces stress					●			

of interest in the academic pursuit of such effects (see Table 16.2).

Tapôtement

Much investigation into the effects of tapôtement has been conducted by physical therapists seeking to validate the use of such techniques for respiratory conditions. The pounding effect of tapôtement manipulations on the ribcage has been used to loosen mucus in clients with respiratory conditions such as asthma and cystic fibrosis (De Domenico & Wood 1997; Rattray & Ludwig 2000). Tapôtement also has the effect of quickly increasing local blood flow to the area treated (Liston 1995).

Much of the research on tapôtement has investigated its effect on loosening mucous secretions and increasing airway clearance in the lungs, primarily in respiratory conditions that are associated with an excessive production of sputum, such as cystic fibrosis.

Mucus clearance is a problem in pulmonary conditions like cystic fibrosis and bronchiectasis (Langenderfer 1998). In Australia and New Zealand the manual treatment of these conditions is normally performed by a specialist physiotherapist. A physiotherapist would employ specialised techniques known as *manual chest percussion*. These techniques have been used for many years as a means to enhance airway clearance (McIlwaine & Davidson 1996). Percussion is performed with cupped hands alternately striking the chest wall over the lung segment being drained. This is normally used in combination with positioning the patient in such a way that encourages drainage of the congested areas and a series of breathing exercises such as the active cycle of breathing techniques (ACBT) (Dallimore et al 1998; Kisner & Colby 2002).

A study by Dallimore et al (1998) investigated the respiratory and cardiovascular effects of manual chest percussion in seven healthy subjects. Whilst lying on their right side, they received three percussion techniques at random with a 5-minute recovery period between applications. The three different treatments included:

- percussion applied to the lateral chest wall for 1 minute with the subject breathing at their own rate
- percussion to the lateral chest wall with the subject performing five thoracic expansion exercises (TEE) (deep breathing)
- the subject performing five consecutive TEE only (no percussion).

The authors noted all three treatments produced significant increases in inspiration volume and heart rate. Percussion performed with TEE and TEE alone also showed significant increase in the number of breaths per minute, oxygen consumption and arterial oxygen consumption. These findings suggest that percussion stimulates respiratory and cardiovascular function in healthy subjects but due to the small sample size further research would need to be conducted to validate these findings.

A study by Gallon (1991) investigated the effects of chest percussion in patients with copious sputum production. Nine stable outpatients with diagnosed bronchiectasis and a minimum of 25 gm of sputum production per day were recruited for participation. Each subject received three different treatment modalities every day over a 3-week period. The first treatment modality involved postural drainage (PD), deep breathing exercise (DBE), and forced expiration technique (FET) acted as the control. The second treatment modality comprised PD, DBE, FET and fast manual chest percussion (FMCP), whilst the third treatment modality consisted of PD, DBE, FET and slow manual chest percussion (SMCP). Both experimental groups, that received manual chest percussion with PD and FET, resulted in significantly higher rates of sputum production in subjects when compared to the control, whilst fast manual chest percussion was more effective for sputum production than slow manual chest percussion.

Table 16.2 Summary of the reported effects of pétrissage

	Suggested by research	Likely	Questionable	Unlikely
Enhances blood flow			●	
Increases lymphatic return		●		
Removes chemical irritants			●	
Increases connective tissue extensibility			●	
Reduces local swelling			●	
Aids recovery from fatigue				●
Induces muscle relaxation	●			
Reduces muscle soreness				●
Relieves pain		●		

The findings of Gallon (1991) and Dallimore et al (1998) are inconsistent with the earlier findings of Van Der Schans et al (1986). Van Der Schans et al (1986) investigated the effects of manual chest percussion on airway clearance in patients with chronic airflow obstruction and excessive mucous production. The researchers found that the application of manual chest percussion slightly yet significantly improved tracheobronchial clearance in patients with chronic airflow obstruction and excessive secretion. The authors also reported that postural drainage and coughing with or without manual chest percussion had a greater improvement on airway clearance than manual percussion alone.

Bélanger et al (1989) investigated the effects of muscle tapping on soleus muscle motor-neuron excitability. The study involved eight healthy adult subjects between the ages of 19 and 25 years, with no known neurological deficit. Muscle tapping was performed over the soleus muscle, Achilles tendon, hamstring muscles and tibialis anterior muscle for 30 seconds. H-reflex responses were recorded at approximately 5-second intervals during the treatment and less frequently post-treatment up to 5 minutes through electromyography (EMG). It was reported that tapping of these muscles resulted in a reduction of soleus motor-neuron excitability. The researchers proposed that muscle tapping activated a range of afferent nerve fibres such as those involved in touch and pressure as well as the muscle receptors — the Golgi tendon organs and muscle spindles. The findings from this study suggest that tapôtement may have an ability to reduce muscle tone in hypertonic muscle in various neurological, orthopaedic and musculoskeletal conditions.

Despite the findings of Bélanger et al (1989) many authors claim that tapôtement can stimulate the stretch reflex, thereby facilitating a contraction or shortening of the muscle when it is applied to the belly or tendon of that muscle (Fritz 2000; Turchaninov 2000; Salvo 1999; Holey & Cook 1997; De Domenico & Wood 1997). Such an effect is opposite to that of pétrissage, in that rather than relaxing the muscle tissue it leads to contraction or improved tone of musculature (Salvo 2003; Cassar 1999). It is thought that the percussive manipulations stimulate sensory receptors in the tissues (referred to as mechanoreceptors), thereby inducing a protective contraction of the muscles being manipulated. Such a protective response is known as a reflex contraction (Rattray & Ludwig 2000). According to Cassar (1999), when incorporated into a massage sequence, such manipulations should be performed for short duration, as excessive stimulation may lead to muscle fatigue and prove counterproductive (Cassar 1999). Despite such claims, no evidence exists to substantiate the use of tapôtement for improving muscle tone. On the contrary, the body of evidence that currently exists tends to support the use of tapôtement for reducing muscle tone (Bélanger et al 1989).

Hovind and Nielsen (1974) examined the effects of tapôtement in their study of 'the effects of massage on blood flow in skeletal muscle'. Skeletal muscle blood flow was measured before, after and during 2 minutes of hacking by a proficient physical therapist using the Xenon washout method for determining blood flow. Nine healthy volunteers were injected in the brachioradialis muscle of the forearm and the lateral vastus muscle of the thigh with isotonic saline containing Xenon (Xe). The findings from this study showed that the application of tapôtement resulted in a significant increase in blood flow during treatment. Superficial hyperaemia was also noted following tapôtement for up to 10 minutes. The authors suggest that the increase in superficial blood flow was due to a local inflammatory response to tissue damage caused through tapôtement (see Table 16.3).

Friction

Friction techniques are often recommended for the management of injuries, when the inflammatory process is controlled (Brukner & Khan 2001; Lowe 2003).

Table 16.3 Summary of the reported effects of tapôtement

	Suggested by research	Likely	Questionable	Unlikely
Induces muscle relaxation			●	
Stimulates digestion				●
Enhances respiratory function			●	
Relieves pain	●			
Increases lymphatic return				●
Reduces oedema			●	
Increases arousal		●		
Reduces anxiety	●			

It is proposed that friction manipulations promote the healing of injuries by encouraging healthy alignment of connective tissue during the healing process. Despite clinical reports into the effectiveness of such techniques during the recovery phase of injuries, no controlled, randomised studies could be found to support such claims.

It is proposed that friction manipulations have a strong analgesic effect (Hammer 1999; De Bruijn 1984). The underlying mechanism of such an effect is still uncertain; however, various models have been developed to explain this phenomenon. Hammer (1999) discusses the anaesthetic effect of friction using the gate-control theory of pain stating that 'stimulation of large fibre mechano-receptors will cause presynaptic inhibition at the spinal cord, preventing the small-diameter (slower) fibres from reaching consciousness' (p 464).

De Bruijn (1984) investigated the analgesic effects of deep transverse friction on 11 patients diagnosed with tenoperiostal lesions using a Cyriax method of assessment. The author noted that the analgesic effect of deep transverse frictions ranged from 0.3 minutes to 48 hours (mean 26 hours). The findings from this study suggest that transverse frictions applied to lesions during the acute and sub-acute phase of treatment relieve pain and thus may improve functional ability (see Table 16.4).

Vibrations

According to Fritz (2000), vibration manipulations are capable of producing reflexive effects if sustained for a sufficient period of time and performed to a desired intensity. It is believed that when applied for approximately 30 seconds, vibrational strokes will encourage relaxation of muscular tissue. It is proposed that as the sensory input supplied with the application of vibration manipulations is unordered, the central nervous system has difficulty integrating the stimulus, and thus muscular relaxation more often than not results.

Vibrations may stimulate the digestive system by reflexively contracting the smooth muscles of the small and large intestines, encouraging defecation and the elimination of gas (Cassar 1999; Salvo 2003; Tappan & Benjamin 1998). When performed over the ribcage, vibrations loosen mucous from the respiratory system, which is in abundance during respiratory conditions (Cassar 1999; Kisner & Colby 2002; Rattray & Ludwig 2000; Tappan & Benjamin 1998). Vibrations are also believed to have the effect of relieving pain, possibly via the gate-control theory (Salvo 1999). According to Cassar (1999), vibration manipulations reduce the viscosity of thick lymph and interstitial fluid, thus allowing increased lymphatic circulation and reduction of oedema.

Shaking is often used during pre-event and post-event sports massage, possibly due to its effects on decreasing muscle tension and increasing arousal (Benjamin & Lamp 1996). Despite the fact that some authors believe shaking may reduce muscle tone and increase muscle relaxation through a reflex action from the sensory input from proprioceptive nerve afferents in muscles and joints (Hertling & Kessler 1996; Rattray & Ludwig 2000), no research was found to substantiate this claim.

Mothers have been aware of the phenomenon of rocking for decades, as whole-body rocking is a common form of deep proprioceptive stimulation used to calm infants. According to Lederman (1997) studies into the effects of whole-baby rocking have shown it calms and reduces anxiety in infants and small children and is more effective than verbal cues in reducing an infant's crying. In the clinical domain those working with special populations attest to the benefits of rocking for calming disabled or hyperactive children.

It appears the mechanisms underlying such effects of rocking are associated with the vestibular apparatus in the semicircular canals of the ear, in addition to proprioceptive receptors of the skin, joints and muscles. Such sensory information is processed in the area of the brain called the vestibular nucleus. A continuous flow of impulses from the vestibular nucleus plays a part in the generation of motor tone in postural muscles. Inhibition of this flow usually results in muscle relaxation. It has been suggested that slow rhythmic rocking movements stimulate the vestibular apparatus, thereby resulting in inhibition at the vestibular nucleus. The concurrent stimulation of skin receptors may also add to the overall relaxation response (Lederman 1997) (see Table 16.5).

It is clear that more investigation is required to determine the way in which the major massage manipulations affect the body. With sound, controlled, randomised clinical trials, the effects of massage may be more delineated and understood. Such academic pursuit will allow for greater application and acceptance of massage across the wider community.

Table 16.4 Summary of the reported effects of friction manipulations

	Suggested by research	Likely	Questionable	Unlikely
Promotes connective tissue alignment		●		
Reduces pain	●			
Improves functional ability	●			

Table 16.5 Summary of the reported effects of vibration manipulations

	Suggested by research	Likely	Questionable	Unlikely
Promotes connective tissue alignment		●		
Reduces pain	●			
Improves functional ability	●			
Enhances blood flow locally	●			
Stimulates respiratory function	●			
Stimulates cardiovascular function	●			
Induces muscle relaxation	●			
Improves muscle tone		●		
Deactivates trigger points		●		
Increases arousal	●			

CONCLUSION

This chapter has described in detail the major techniques used in Swedish massage, and discussed their usage, application precautions, and varied effects. The massage therapist who has practiced and skilfully mastered each manipulation and variation will possess a plethora of techniques upon which to draw and create his or her own unique massage sequence.

A sound and well-packaged treatment, such as the one outlined in this text for the beginning therapist, encompasses each and every one of the Swedish manipulations. When performing techniques, the beginning therapist should be sure to practice safely, endeavouring to adhere to the guidelines, scope and ethics of the massage profession. Above all, the beginning therapist should have fun and be playful with the varying strokes, recognising the great art and responsibility they hold within their fingertips.

Questions and activities

1 A regular client of yours attends for a massage. She is 7 months pregnant with her second child, and is complaining of fluid retention in her ankles and feet, which her doctor says is perfectly normal at this stage of her pregnancy.
   (a) What massage strokes would be beneficial to apply over her feet and legs during the massage and why?
   (b) What other benefits of this stroke may assist this particular client?

2 A regular elderly client of yours presents for a massage. He is recovering from a bad cough, which has left him with respiratory congestion.
   (a) What massage strokes may prove useful for this client?
   (b) Describe any contraindications you may need to be aware of with this client.

3 A nurse friend of yours is considering introducing a program of massage into the respite centre she works in, which largely provides short-term accommodation for elderly persons. She states that she is looking for a short protocol that could prove useful to assist with sleep, and requires that it be supported by evidence.
   (a) Suggest a massage stroke suited to this purpose, and describe the evidence to support its use.
   (b) What other benefits of this stroke may be of interest to your friend for the elderly population in respite care?

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