

Musculoskeletal physiotherapy

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Musculoskeletal physiotherapy (MSK) is probably the largest area of physiotherapy in terms of practitioner and patient numbers. It is also the area that is common to physiotherapy around the world. MSK in this sense means orthopedic medicine, manual therapy, the alternative therapies such as osteopathy, sports medicine, Maitland, etc. Basically, MSK encompasses all the “hands on” manual techniques and exercise prescription for the relief or prevention of disorders of the musculoskeletal system. It is a culmination of detailed anatomic, physiologic, pathologic knowledge. What appears to catch most students out is the necessity of a detailed and concise assessment. As with all areas of physiotherapy, the assessment is the single most important part. The big difference here is that you are the *main* diagnostician in the treatment of *your* patient. This may mean looking at results of diagnostic imaging, blood biochemistry, nerve conduction studies, biopsies, etc, to help you develop a true clinical picture and a diagnosis.

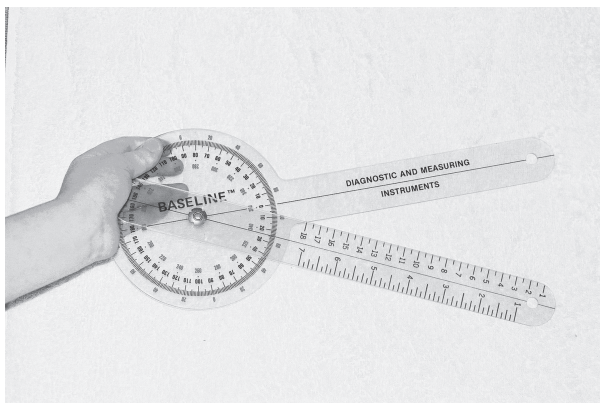


Fig. 4.1 A goniometer for precise measurements of joints is very important.

A glossary of terms may be useful to begin with: For a more comprehensive list of physiotherapy terms, *The dictionary of physiotherapy* (Porter 2005) is necessary.

- **Abduction:** movement away from the midline of the body.
- **Accessory movement:** a movement that can be done by the therapist, which makes up part of a gross overall movement. However, the patient cannot isolate and carry out this movement. For example, in shoulder abduction, the humeral head glides inferiorly in the articular surface of the glenoid cavity. A therapist can perform a passive accessory caudad glide to help improve the whole movement of abduction. The opposite is physiologic movement.
- **Active movement:** movement performed without facilitation.
- **Adduction:** movement towards the midline of the body.
- **Caudad:** movement towards the tail (literally) or towards the feet (practically).

- **Cephalic:** to do with the head (movement towards the head).
- **Extension:** a joint movement whereby the interior angle increases.
- **Flexion:** a joint movement whereby the interior angle decreases.
- **Manipulation:** high-velocity thrust moving a joint well into the limits of its range. The patient cannot stop this procedure.
- **Mobilization:** movement of a joint in such a way that the patient has total control and can stop the procedure if need be.
- **Overpressure:** the additional movement in a joint beyond the normal range that is applied by the therapist during assessment.
- **Paradigm:** a concept or belief.
- **Passive movement:** movement of a joint by the therapist.
- **Physiologic movement:** a movement of a joint such as shoulder abduction. It can be passive (i.e. no effort from the patient required as the therapist moves the joint) or active (the patient does all the work). The opposite is accessory movement.

So what is musculoskeletal therapy?

You will hear practitioners talk about the various ways in which to treat or assess a patient such as “orthopedic medicine,” “McKenzie,” “Maitland,” “Mulligan,” “Cyriax,” etc. Each of these techniques has slightly different approaches and theories behind it. There are people who will vigorously stick to one particular type of treatment and there are people who “cherry pick” aspects from each. Either way, as a student physiotherapist it is essential that you consider all of them to be within your learning remit. Below is a brief taster of some of the different techniques that physiotherapists employ in their practice. It is worth noting that none of these techniques is “physiotherapy” so they are regarded as *part* of your treatment arsenal and not your only trick! As a physiotherapist, you have legal license to carry out these techniques but you may see medical doctors, osteopaths and chiropractors also using them. Of course, certain types are preferred by certain professions; osteopathy and physiotherapy are becoming more alike in their treatments as the evidence base supports treatments and the professions take them on and concentrate on them.

Initial subjective assessment

Assessments are always made up of two parts – the subjective and the objective. The former involves information gathered by questioning and the latter is what is seen and/or measured by the clinician. The initial assessment is no different but it usually involves additional information.

The clerical questions are the standard name, address, general practitioner/family physician, date of birth and so on, so that you can be sure that you have the correct patient in front of you.

Some “special questions” are typically also asked at the start. These may include queries about:

- heart or lung problems, blood pressure
- diabetes

- asthma
- rheumatoid or osteo-arthritis (be prepared to explain the difference between them)
- steroid usage
- anticoagulant therapy
- allergies
- any recent significant weight loss that can't be explained by dieting or increase in activity
- cancer.

Some questions may be guided by the type of condition, such as the cauda equina check for low back pain.

- Bladder retention/incontinence, bowel incontinence
- Saddle anesthesia
- Bilateral leg pain/weakness

Headings that may help gather a database of your patient are listed below. Something that may be of use to you is to work towards a SIN factor, which is the Severity, Irritability and Nature of the condition. While you read through these, have a think about some answers and which heading – severity, irritability or nature – they may contribute to.

PRESENTING CONDITION (PC)

- What is your *main* problem with your condition?
 - This is sometimes referred to as “question 1.”
 - The information you need is: *how is this disease affecting the patient?*
 - This question will help you discover the *actual* effect on lifestyle and function as well as what the patient would like to regain.
 - You can guide the answer but try not to direct the answer: *“Is it loss of movement or strength, pain, or something else?”* or *“Is it preventing you from doing something you like or have to do?”*, etc.

HISTORY OF PRESENTING CONDITION (HPC)

- Was there a major event that led to these symptoms (like a vehicle incident) or is it a result of microtrauma (such as repetitive strain injuries)? Perhaps it just came on (insidious onset).
 - Try to gather information relating to the incident such as the mechanism of injury, were they driving or a passenger, were seatbelts worn, how far did they fall, how long before medical attention arrived, etc. Remember to be sensitive to psychologic/emotional implications relating to a major incident.
- How long have you noticed that something is not right/have you had the symptoms? Try to establish the age of the condition; is this one of many episodes or the only time this has happened?
- Did the symptoms come on immediately or develop over time?
- Are there any legal issues to consider?
- What other treatments or investigations have been used so far, if any (medical/surgical/complementary)?

LIST OF SYMPTOMS

Since you have asked about the *main* problem in question 1, they should have explained the whole story of that so now is a good time to ask what other symptoms/problems they can think of.

PAIN

- Do they have any?
- Is it constant or intermittent? Explain that constant means *all the time, 24 hours of the day*.
- Ask them to describe the pain – throbbing, sharp, dull, “toothache like,” shooting, etc.
- Can they rate it out of 10? The Numerical Rating Scale (NRS) is a 0–10 scale which is very useful as an objective measure. Ask for a number between 0 and 10 to describe when the pain is at its worst, least and right now.
- Is it the same intensity or variable?
- Aggravating/easing factors – remind them that rubbing, heat and rest are valid answers here. Also explore the length of time it takes for the pain to disappear.
- Is the pain so bad sometimes that they have to miss something (like work, hobbies)?
- Diurnal pattern.
 - Do the symptoms appear worse at different times of the day (i.e. do they worsen/improve through the day or remain constant)?
 - Sleep patterns – are they aware of the symptoms when they awaken/on rising from bed/through the night (does it wake them)? If so, how many hours of unbroken sleep do they get?

PAST MEDICAL AND SURGICAL HISTORY (PMH)

Simply a list of conditions and operations that the patient has had in the recent past. Some things may appear insignificant to the pathology you face, such as the patient with adhesive capsulitis who tells you that they also have hypothyroidism or diabetes mellitus – the two have been likened to adhesive capsulitis (Siegel et al 1999).

DRUG HISTORY (DH)

Just a list of medication they take plus any other drugs they may wish to inform you of. Remind the patient that it is not only prescribed medications you need to be aware of – many people will buy their own from a pharmacy or herbalist.

SOCIAL HISTORY (SH)

- What do they do for a living?
 - Has this condition had an impact on their job?
 - Is it possible that their job may have caused this condition? Be *very* careful not to imply or let them infer that their employer is to blame for their discomfort.

- Hobbies
 - Is this condition preventing them from pursuing their hobbies?
 - Is it possible that their hobby has contributed to the condition?
- Home circumstances.
 - Can they carry out activities of daily living (ADL)? Personal ADLs (PADLs) include washing, dressing, brushing teeth, etc. Domestic ADLs (DADLs) include cleaning, cooking, driving, etc. Establishing this will give you an indication not only about their ability to function but also their dependency on other people. This can be quite an emotive topic as sometimes it is quite humbling to have lost a certain degree of independence.
 - Who do they live with? Do they have dependants? Is the person they have become dependent on capable of coping with this new situation?
 - Do they have stairs and can they negotiate the stairs *safely*?

So there it is – the basic checklist of subjective questioning that will create for you a comprehensive database of the patient. Having asked these questions, you will have a good idea of the SIN factor, the patient's motivation for recovery, the patient's priorities, and the gross effect of this condition.

Initial objective assessment

The objective assessment is the method by which you discover the clinical signs of the pathology rather than just the symptoms. It is good practice to obtain information from the other side too and comment on whether anything you find (such as swelling) is of long standing or a new sign. As with the subjective assessment, it is always helpful to have a system in place. A detailed assessment is a thorough one that extends way beyond the realms of joint measurements. As a medical professional, you should note any other significant observations. Below is a brief guide to the objective assessment.

OBSERVATIONS

- Bulk.
 - As this is objective, you should get a measurement of swelling. In doing so, you will also note the placement of the tape measure (e.g. L ankle circumference 30 cm measured at 2 cm above lateral malleolus). It is also worth measuring the opposite side for comparison.
 - Muscle atrophy/hypertrophy – again, you can get a tape measure around it.
- Skin color.
- Condition of skin and nails.
 - Dry skin
 - Abrasions, ulcers, etc.
 - Brittle nails
 - Abnormal hair growth
 - Other abnormal growths

- Artefacts.
 - Any walking aids, braces, orthotics, catheter, bandages, etc. in situ?
 - How well do they fit? Any red markings, etc? Appropriate use of stick/frame?

POSTURE

- Standing and sitting posture.
 - Are they symmetric (folds/shoulders creases, etc.)?
 - Do they have a kyphotic (excessive thoracic curve), lordotic (excessive lumbar curve), lateral shift (shoulders not aligned with hips, usually indication of disk herniation or facet joint irritation) or flat back (no curve) posture?
 - Any scoliosis (lateral spinal curvature)?
 - Do they lean and prop to one side?
 - Do they become uncomfortable quickly?
 - Do they have a good base of support?
 - Is there rotation at the hips?
 - Are the feet excessively turned in or out?
 - Is one knee bent in standing?

GAIT

- What are the feet doing?
 - Heel strike
 - Follow through – as the foot becomes flat on the ground, does it roll out to the side or into the middle (pronate or supinate)?
 - Toe off – is dorsiflexion achieved or did they compensate?
 - Swing phase – do the toes clear the ground satisfactorily?
 - Are they facing the direction of travel
- What are the hips doing?
 - Are the hips level through the gait cycle or do they bob up and down (Trendelenburg gait)?
 - Are they rotating at all?
- What is the upper body doing?
 - Are the arms swinging?
 - Is the body rotating normally?
 - What does the patient's face look like – are they in pain?

RANGE OF MOVEMENT (ROM)

- Measure the joints above and below the pathologic one.
 - Passive and active
 - Quality of movement
 - What is the limiting factor? Pain/stiffness, etc.
- Are you aware of the normal joint ranges?
- Use of the goniometer is essential for accuracy. Remember – left and right!



Fig. 4.2 This reverse scapulothoracic rhythm is obvious but not all conditions of movement are as easy to spot. (Reproduced from Magee 2008, with kind permission from Elsevier.).

- Functional or gross movement.
 - Rather than just checking simple flexion of the elbow, ask the patient to scratch their ear or touch their nose to see how the limb works as a unit.
 - For backs, forward flexion, side flexion, rotation and extension need to be observed.

Clinical semaphore

Any healthcare practitioner needs to know the signs and symptoms that should ring alarm bells. Currently, a common system is the red and yellow flags.

Red flags are physical risk factors that require co-ordinated care from the patient's general practitioner or, in some cases, immediate referral to the emergency department. Red flags include (nonexhaustive list): considerable unexplained weight loss, unremitting night pain, cauda equina symptoms (bladder and bowel incontinence or retention, saddle anesthesia), pulsatile mass in the abdomen, progressive motor/sensory loss in lower limbs, etc.

Yellow flags are psychologic risk factors that may hinder the treatment and hence recovery and can include (nonexhaustive list): inappropriate thoughts regarding condition, i.e. pain = harm, catastrophizing, a substantial amount of time off work, excessive visits to health professionals recently, depression, and so on.

A whole system of flags is in use, including black (work conditions that may inhibit rehab), blue (perception of work) and orange (significant psychologic issues, including drug abuse). Not all clinicians subscribe to this method so even if you become the oracle of flags you should check local policy for abbreviations in clinical notes before you use them.

Treatments

The treatments in musculoskeletal therapy vary, as previously mentioned. Rather than explain the individual treatment techniques, I have given a brief

description of the treatment concepts and general information relating to some of the less obvious treatments.

Maitland

Detailed information regarding Maitland treatments can be found in probably the two most important books for Maitland practitioners: *Maitland's peripheral manipulation* (Hengeveld & Banks 2005) and *Maitland's vertebral manipulation* (Maitland et al 2005). Geoff Maitland is an Australian physiotherapist who revolutionized the teaching of vertebral manipulations and the approach of adapting techniques for neuromusculoskeletal conditions. A thorough assessment including not only the joint *ranges* but also the movement *quality* is key for Maitland practitioners.

The themes that a physiotherapist should use to approach a patient are as follows (Hengeveld & Banks 2005).

- The patient-centered approach to dealing with movement disorders. This is a commitment to the patient in terms of concentration, revisiting the information given to you by the patient until it makes sense, being nonjudgmental, having a skilled understanding of all types of communication, and understanding the science of the condition (i.e. what a clinician should know).
- The brick wall approach and the primacy of clinical evidence. This is making a distinction between the theory and diagnosis of a condition and the clinical history (i.e. the two are on either side of a permeable brick wall). This will allow the clinician to separate the signs and symptoms (the clinical) from the science (the theory), fostering a treatment that is guided by the patient's condition rather than by a "diagnosis." The message is – treat the symptoms, not the diagnosis.
- The paradigm of identifying and maximizing movement potential. This is quite self-explanatory.
- The science and art of assessment. This too is quite self-explanatory, except you need to remember that assessments are ongoing, not just something you do when you first meet a patient.

The techniques are fairly simple to understand (you will need to learn the physiology of why they work, however). The main reasons for mobilization are pain and range. The "grades" used in Maitland underpin these reasons.

- Grade I – small-amplitude movement without resistance (i.e. you don't move far and don't enter into the range of the joint).
- Grade II – large-amplitude movement with small amounts of resistance.
- Grade III – large amplitude into range.
- Grade IV – small amplitude in range (i.e. not a great deal of movement but right at the end of the joint range).

It won't take a lot of effort to grasp the idea that the lower grades are aimed at pain and the higher grades are aimed at range of movement. Do you know *why*? One thing to always consider is: how much can the patient tolerate? Maybe you will have to start with a lower grade to lower the pain levels before you take the joint into range.

- Grade V – this is a manipulation rather than a mobilization.

Cyriax/orthopedic medicine

Further information relating to Cyriax and orthopedic medicine can be found on the website of the Society of Orthopedic Medicine (SOM): www.somed.org. James Cyriax was a physician who noticed that there were, at the time, many undiagnosed and poorly treated conditions affecting the musculoskeletal system. He set about developing a system of assessment and diagnosis for these as well as nonsurgical treatments for soft tissue lesions (SOM 2004).

The principles of Dr Cyriax and therefore orthopedic medicine were:

- all pain has a source
- all treatment must reach the source
- all treatment must benefit the lesion.

We now know that pain is much more complex than this (see Professor Paul Watson's contribution, Chapter 9) and thus orthopedic medicine has undergone constant development and reappraisal in light of evidence.

Examination by tissue tension is a pillar of the Cyriax concept too. The idea is simple – if a tissue is damaged, it will be painful to pull. Dr Cyriax devised three principles to back this.

- Isometric contractions test the function of the contractile tissues.
- Passive movements test the function of the inert structures.
- The capsular pattern differentiates between joint conditions and other structural lesions.

It is for these reasons that physiotherapists trained in orthopedic medicine are hot on their functional anatomy as the concept deals with identifying the slightest imbalance or irregularity and the structure involved. The treatments involve mobilizations and soft tissue massage together with electrotherapeutic agents.

McKenzie

Robin McKenzie is not only a lucky chap but also a very astute physiotherapist from New Zealand. Legend has it that, while treating a back patient with little success, Robin told him to lie down on the plinth while he got ready. Robin walked in to find his patient lying prone (on his front) but with the head break in the bed so that the patient was in extreme back extension. The patient explained that this was the most comfortable position for him as it reduced the pain in his back. A lesser physiotherapist may have dismissed such a comment (well, they would have done in the mid 1950s, which is when this story is said to have happened). However, Robin formed a spinal treatment from it that is widely used by physiotherapists and orthopedic surgeons today. The idea is to “centralize the pain” by exercises. It is postulated that in a posterior disk hernia, an extension will express pressure over the posterior aspect of the disk, forcing the gelatinous nucleus pulposus back into a central position. This will provide pain relief, allowing more effective exercise to be carried out. A true McKenzie practitioner will not use other modalities in practice such as acupuncture or heat.

Acupuncture

Acupuncture is administered by trained physiotherapists for the relief of pain and relaxation. It has been in use for over 3000 years in the Far East,

a method that has really stood the test of time. Two theories are used: the Traditional Chinese Medicine (TCM) approach and the Western medicine approach. As medical practitioners, it is important to ensure that the aspects of acupuncture with a sturdier scientific base are delivered, and the use of other aspects is not justifiable until they have similar backing. As it stands, pain management is the only indication for acupuncture in the UK.

The ancient Chinese believed that the body's health is dependent on the smooth and balanced movement of qi (energy) through meridians (channels). A number of factors can affect the flow, including the weather, stress, fear, infection, etc. The insertion of needles in the right places can free the flow, stimulating the body's own healing power.

The Western approach has the benefit of modern investigations such as functional magnetic resonance imaging (fMRI). However, there are many questions that remain unanswered by Western science and many theories that are yet to be proven. Without wanting to get carried away, here is just one development in the search for an answer to a 3000-year-old question. A recent study (Dhond et al 2008) showed increased connectivity in many parts of the brain during and after acupuncture, in particular the anterior cingulate cortex (ACC), which is known to be involved in the downregulation of pain (the way pain perception is controlled by the brain). However, although evidence would appear to support the use of acupuncture for pain, we don't know the exact consequences of the increased activity in the ACC. It is therefore hard to make a solid link between the reduction of perceived pain and the increased activity in the ACC during acupuncture. The pain gate theory is also used for acupuncture, stimulation of mechanoreceptors "closing the gate." Simple relaxation is another theory; we know that when you are more relaxed, the pain you feel is reduced.

I will not go any further but I advise you to speak to a practicing physiotherapist who uses acupuncture. I am sure that they would love to discuss the theories and science behind it all.

Muscle energy techniques (MET)

This technique is commonly used by osteopaths and physiotherapists and is based on the fact that to increase a joint range, it is necessary to overcome the neuromuscular barrier (i.e. the reflex contraction following stimulation of the Golgi body). The principle is that this reflex arc will fatigue with excessive use and can therefore be overcome. There are a few techniques to learn.

Reciprocal inhibition is simply the fact that contraction of an agonist will exert an inhibitory effect upon the contraction of its antagonist. Let's think about the elbow – during biceps contraction (the agonist), the triceps (its antagonist) will relax and allow additional force to be expressed over it (i.e. a stretch).

Postisometric relaxation works by the principle that maximal contraction is followed by maximal relaxation. The reflex arc will enter a phase of refraction and thus will tolerate a stretch being applied without activation of the muscle.

Sustained stretch is arguably a MET but is simply the sustained stretch over a muscle that will eventually fatigue the reflex arc and allow greater range to be achieved.

MULLIGAN

Brian Mulligan is a New Zealand physiotherapist who cites McKenzie, Maitland and Cyriax as being influential in his development of this system of manual therapy. The concept relates to traditional physiotherapy at its best. The idea is that the therapist should provide a sustained parallel or perpendicular glide to a joint to the end of range pain free to increase the overall range of movement. There are two types of movement considered by the concept.

- Sustained natural apophyseal glides (SNAG) – a vertebral mobilization.
- Mobilization with movement (MWM) – a passive accessory movement with active (or passive) physiologic movement of the joint.

The Mulligan concept can be easily used in conjunction with any of the above as an adjunct or as a stand-alone treatment option. It is easily carried out by the therapist and can even be taught to the patient with relative ease.

Myofascial therapy

The nice thing about myofascial therapy is that it has had a multiprofessional evolution through the years. In the 1920s German physiotherapists used Bindegewebsmassage (connective tissue massage) and osteopaths of the time used a technique that later became known as the “fascial twist.” The technique progressed further with an American medical doctor called Janet Travell in the 1940s. Dr Travell first used the terminology we use today – trigger point and myofascial therapy. The technique is still used today by these three professions with great effect.

The myofascia is connective tissue that can become adhered to surrounding tissues following injury, inflammation, poor posture, etc., resulting in inhibited movement and pain. The technique is simply a soft tissue manipulation that releases the myofascia, allowing normal healing to occur. Onlookers will see the practitioner enthusiastically driving an elbow into their patient's body; this is because considerable force is sometimes needed for deeper tissues.

Pilates

Developed by Joseph Pilates as a method of rehabilitation for German soldiers returning from the Great War, this concept is based on the control and co-ordination of the muscles, especially core muscles controlling the torso and spinal column. Pilates is an excellent adjunct to the more traditional physiotherapy techniques for all types of patients as it not only encourages better core stability, it empowers the patient, making them the locus of control over their condition, and that is probably the most effective treatment you can give.

Pilates was once delivered by way of a machine called a “reformer” but now it is essentially a form of mat work exercise that allows certain postural positions to be practiced and enhanced. The idea is that all movements are purposeful and controlled. The original theory also encompassed breathing techniques to purge the body of toxins and deliver high quantities of oxygen to the tissues.

Many physiotherapists are now completing “clinical Pilates” courses which allow them to safely teach the techniques as a therapeutic exercise specific to the patient's pathology.

Exercise therapy

Therapeutic exercise is defined as the systematic and planned performance of bodily movements, postures or physical activity to remediate or prevent injury, restore or improve physical function, reduce health-related risk factors, and optimize overall health (Kinser & Colby 2002). Exercise is one of the earliest forms of physiotherapy treatment. Physiotherapists are renowned for their knowledge of therapeutic exercise and it remains one of the most common treatments used. One of the reasons is similar to that for Pilates treatments – the patient achieves a sense of ownership over their rehabilitation. This is a double-edged idea, however: if your patient lacks motivation, do you think they will do the home exercises? The answer, alas, is no! For this reason, part of the skill of prescribing home exercise is placing the emphasis on them that is appropriate for the patient. If the patient is ultra motivated and willing then a large portion of the therapy can be home exercise. If not, then you give some home exercises and make more effort in the clinic.

Learning about exercise isn't just a matter of thinking "Well, he has weak biceps, I'll give him some biceps curls." There are many things to consider.

- Am I trying to achieve increased strength or stamina? How does that influence the prescription?
- Can the patient achieve contraction against gravity? What do you do if they cannot?
- How many repetitions (number of times they lift the weight) and sets (number of times they are to perform all the repetitions)?
- How much weight do I use?
- How long should a stretch be applied for?

Sometimes you will be inclined to give general exercise advice for someone who is looking to improve general fitness and maybe lose weight. This is within the scope of the physiotherapist and something that you should relish the opportunity to do. As with all types of exercise prescription, you should consider the following.

- *Warm-up* – this is vital. Do not forget to give appropriate advice relating to an effective but not exhausting warm-up.
- *Environment* – this has to be nondistracting and conducive to exercise but above all **SAFE**.
- *Amount to do* – this is easily worked out. You must *always* ask the patient to carry out the exercises you are giving them and, in some cases, show them. Time how long it takes for them to carry out these tasks and decide whether or not you have given too much. You may think that you are doing them a service by giving them 2 hours' worth of workout but realistically, who is going to stick to that?
- *Pain* – another reason why you get them to demonstrate the exercises. If it is painful, you will have to redesign the workout.
- *Times of the day* – when do you suggest they do this? Largely, it is considered counterproductive to get someone doing hard physical activity 2 hours before going to bed as they may be aching and lose sleep.

- *Are they compensating?* Again, watch the patient as they give you a demonstration! Even in good health, you will see people cheating at exercise. I do it all the time and I am quite sure most of you do at some point too! Next time you go to the gym, watch the big macho man doing biceps curls: how much of that action is elbow flexion and how much is back extension followed by additional flexion once he has overcome the gravity line? Also, how fast do some people do leg presses? That is simply using momentum to your advantage, i.e. cheating!

Patients are amazing at compensating – you will never tire of spotting their very subtle ways to overcome gravity or recruit other muscles to take over.

All in all, therapeutic exercise is something that you should spend a great deal of time studying regardless of the clinical area you head towards. Two excellent books for understanding exercise are *Therapeutic exercise: foundations and techniques* (Kisner & Colby 2002) and *Therapeutic exercise for lumbopelvic stabilization* (Richardson et al 2004).

Massage

Massage is something that is often confused in physiotherapy; there is a difference between the massage you get with a masseur and the therapeutic massage you will provide as a physiotherapist. I don't envy the female physiotherapists who have to put up with the moronic sleaze bag claiming "I have a groin strain injury – can I have a massage?" If they knew that you are far more likely to get hands on with some serious deep transverse friction massage than a nice soothing rub down, perhaps they would forget it.

Having said that, with your anatomic knowledge and understanding of the physiologic effects of massage, there is no reason why you can't use "normal" massage for therapeutic relaxation.

A good definition of massage is provided by Holey & Cook (1997):

Massage is the manipulation of the soft tissues of the body by a trained therapist as a component of a holistic therapeutic intervention. (p3)

A well-conducted therapeutic massage can:

- promote flow of bodily fluids (lymphatic, edematous, blood, etc.)
- reduce muscle soreness and spasm
- reduce pain in general
- mobilize connective tissue
- promote normal remodeling of tissues
- promote the release of endorphins.

The deep transverse friction massage mentioned earlier is a deep manipulation of specific tissues and can relieve pain, improve function and increase blood flow to the area, kick starting the inflammatory processes. This is a skilled massage and involves a detailed anatomic knowledge as getting it wrong will be hellishly uncomfortable for the patient.

In the clinic

As you can see, there is an awful lot that falls under the heading of musculoskeletal physiotherapy. During your placement, however, you will find

that if you have a good underlying knowledge of anatomy, physiology and pathophysiology, it all falls into place quite nicely. It is always useful to have an aide mémoire for anatomy and pathology in your pocket but it is essential to have a book that details objective assessments in orthopedics because there are so many.

I have only scratched the surface of this diverse and challenging topic but I hope you will feel that you know a little more about the practice of orthopedic/musculoskeletal medicine.

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