

## Functional technique

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### Origins of functional technique

There is a long tradition in manipulative medicine in general, and osteopathy in particular, of positional release methods, often applied in an almost intuitive manner.

Hoover (1969a) quotes the words used by two osteopaths of his acquaintance who had been students of the founder of osteopathy, Andrew Taylor Still. They individually responded to a question as to what it was that they were doing while treating a patient, with the words, 'I am doing what the body tells me to do'.

All the words in the world cannot substitute for actually *feeling* of what happens when these methods are applied and, for this reason, exercises later in this chapter will be included in order to help bring to life the meaning and feeling of the explanations for what is in essence the most simple, and yet one of the most potent, of manipulative methods; one that creates a situation in which dynamic homeostatic balance of the affected tissues is created; one in which self-repair can most easily occur.

The term 'functional technique' grew out of a series of study sessions held in the New England Academy of Applied Osteopathy in the 1950s under the general heading of 'A functional approach to specific osteopathic manipulative problems' (Bowles 1955, 1956, 1957).

The methods being explored were derived from traditional methods that dated back to the origins of osteopathy in the nineteenth century, but which had never been formalized or scientifically evaluated.

It was only in the 1950s and 1960s that research, most notably by Irvin Korr (1947), coincided with a resurgence of interest in this approach, largely as a result of the clinical and teaching work of Hoover, with the result that, 'functional technique has become quite comfortable in today's scientific climate, as well as streamlined and highly effective in practice' (Bowles 1981).

When considering the methodology of functionally orientated techniques, one distinctive difference stands out as compared with most other positional release methods, and with strain/counterstrain (SCS) in particular.

In functional work, palpation for a 'position of ease' involves a subjective appreciation of tissue, as it is brought through positioning towards ease, to a state of 'dynamic neutral' (see Chapter 1), rather than relying on a report by the patient as to reduction in pain as positioning and fine-tuning is carried out.

Theoretically (and usually in practice) the palpated position of maximum ease (reduced tone) in the distressed tissues should approximate the position that would have been found if pain was being used as a guide as in Jones's or Goodheart's approaches, as described in Chapters 3 and 4.

Similarly, if the concept of 'exaggeration of distortion' or 'replication of position of strain' is being employed, the same end-position should be achieved whether functional or SCS is being used, a position of dynamic neutral (see Chapter 1, Box 1.2, for a summary of positional release variations).

Bowles (1956) gives an example:

*A patient has an acute low back and walks with a list. A structural diagnosis is made and the fingertips palpate the most distressed tissues, within the area of most distress. The operator begins tentative positioning of the patient, preferably sitting. The fingertips pick up a slight change toward a dynamic neutral response, a little is gained, not much, but a little. A little, but enough so the original segment is no longer the most distressed area within the area of general distress. The fingers then move to what is now the most acute segment. As much feeling of dynamic neutral is obtained here as possible. Being temporarily satisfied with slight improvements here and there, this procedure continues until no more improvement is detectable. That is the time to stop. Using tissue response to guide the treatment the operator has step-by-step eased the lesioning and corrected the structural imbalance to the extent that the patient is on the way to recovery.*

Compare this description with the example given in Box 10.14 of a mobilization with movement approach to a similarly acutely distressed young man (see also Figs 10.25A, B and C).

### Functional objectives

Hoover (1957) has summarized the key elements of functional technique in diagnosis and treatment:

- Diagnosis of function involves passive evaluation as the part being palpated responds to physiological demands for activity made by the operator or the patient.
- Functional diagnosis determines the presence or absence of normal activity of a part which is required to respond as a part of the body's activities

(say respiration, or the introduction of passive or active flexion or extension).

- If the participating part has free and 'easy' motion, it is normal. However, if it has restricted or 'binding' motion, it is dysfunctional.
- The degree of ease and/or bind present in a dysfunctional site when motion is demanded is a fair guide to the severity of the dysfunction.
- The most severe areas of observed or perceived dysfunction are the ones to treat initially.
- The directions of motion which induce ease in the dysfunctional sites indicate precisely the most desirable pathways of movement.
- Use of these guidelines automatically precludes undesirable manipulative methods, since an increase in resistance, tension or 'bind' would result from any movement towards directions of increased tissue stress.
- Treatment using these methods is seldom, if ever, painful and is well received by patients.
- The application requires focused concentration on the part of the operator and may be mentally fatiguing.
- Functional methods are suitable for application to the very ill, the extremely acute and the most chronic situations.

### Functional exercises

The exercises described in this chapter are variously derived from the work of Johnston (1964), Stiles and colleagues (Johnston et al 1969, Johnston 1988), Greenman (1989), Hoover (1969b) and Bowles (1955, 1964, 1981).

Bowles is precise in his instructions to those attempting to learn to use their palpating contacts in ways which will allow the application of functional methods:

- The palpating contact ('listening hand') must not move.
- It must not initiate any movement.
- Its presence in contact with the area under assessment/treatment is simply to derive information from the tissue beneath the skin.
- It needs to be tuned into whatever action is taking place beneath the contact and must temporarily ignore all other sensations such as 'superficial tissue texture, skin temperature, skin tension, thickening or doughiness of deep tissues, muscle and fascial tensions, relative positions of bones and range of motion'.
- All these signs should be assessed and evaluated and recorded separately from the functional evaluation, which should be focused single-mindedly on tissue

response to motion: 'It is the deep segmental tissues, the ones that support and position the bones of a segment, and their reaction to normal motion demands, that are at the heart of functional technique specificity' (Bowles 1981).

### Terminology

Bowles (1964) explains the shorthand use of these common descriptive words:

*Normal somatic function is a well-organized complexity and is accompanied by an easy action under the functionally-orientated fingers. The message from within the palpated skin is dubbed a sense of 'ease' for convenience of description. Somatic dysfunction could then be viewed as an organized dysfunction and recognized under the quietly palpating fingers as an action under stress, an action with complaints, an action dubbed as having a sense of 'bind'.*

In addition to the 'listening hand' and the sensations it is seeking, of ease and bind, Bowles suggests we develop a 'linguistic armament' which will allow us to pursue the subject of functional technique without 'linguistic embarrassment' and without the need to impose quotation marks around the terms each time they are used.

He therefore asks us to become familiar with the additional terms, 'motive hand', which indicates the contact hand that directs motion (or fingers, or thumb or even verbal commands for motion – active or assisted), and also 'normal motion demand', which indicates what it is that the motive hand is asking of the body part. The motion could be any normal movement such as flexion, extension, side-bending, rotation or combination of movements – the response to which will be somewhere in the spectrum of ease and bind, which will be picked up by the listening hand for evaluation.

At its simplest, functional technique sets up a 'demand–response' situation, which allows for the identification of dysfunction – as bind is noted – and which also allows for therapeutic intervention as the tissues are guided into ease.

### Bowles's summary of functional methods

In summary, whatever region, joint or muscle is being evaluated by the listening hand, the following results might occur:

- The motive hand makes a series (any order) of motion demands (within normal range), which includes all possible variations. If the response noted in the tissues by the listening hand is ease in all directions, then the tissues are functioning normally.
- The motive hand makes a series of motion demands, which includes all possible variations.

- However, if/when some of the directions of movement produce bind when the demand is within normal physiological ranges, the tissues are responding dysfunctionally.

- For therapy to be introduced in response to an assessment of bind, relating to particular motion demands, the listening hand's feedback is required so that, as the motions which produced bind are reintroduced, movement is modified so that the maximum degree of ease possible is achieved:

*Therapy is monitored by the listening hand and fine-tuned information as to what to do next is then fed back to the motive hand. Motion demands are selected that give an increasing response of ease and compliance under the quietly palpating fingers. (Bowles 1964)*

The results can be startling, as Bowles (1964) explains: *Once the ease response is elicited it tends to be self-maintaining in response to all normal motion demands. In short, somatic dysfunctions are no longer dysfunctions. There has been a spontaneous release of the holding pattern.*

## 1. Bowles's functional exercise

*Bowles (1964)*

- Stand up and place your fingers on your own neck muscles paraspinally, so that the fingers lie – very lightly, without pressing, but constantly 'in touch' with the tissues – approximately over the transverse processes.
- Start to walk for a few steps and try to ignore the skin and the bones under your fingers.
- Concentrate all your attention on the deep supporting and active tissues as you walk.
- After a few steps stand still and then take a few steps walking backwards, all the while evaluating the subtle yet definite changes under your fingertips.
- Repeat the process several times, once while breathing normally and once while holding the breath in, and again holding it out.
- Standing still, take one leg at a time backwards, extending the hip and then returning it to neutral before doing the same with the other leg.
- What do you feel in all these different situations?

This exercise should help to emphasize the 'listening' role of the palpating fingers and their selectivity as to what they wish to listen to.

The listening hand contact should be 'quiet, non-intrusive, non-perturbing' in order to register the compliance of the tissues and evaluate whether there is a greater or lesser degree of 'ease' or 'bind' on alternating steps and under different circumstances as you walk.

## 2. Johnston and Stiles's sensitivity exercise

(Johnston *et al* 1969)

**Exercise 2(a)** The time suggested for this exercise is 3 minutes.

- In a classroom setting, pair up with another person and have them sit, as you stand behind them resting your palms and fingers over their upper trapezius muscle, between the base of the neck and shoulder.
- The object is to evaluate what happens under your hands as your partner takes a deep inhalation.
- This is not a comparison of inhalation with exhalation, but is meant to help you assess how the areas being palpated respond to inhalation – do they stay easy, or do they bind?
- You should specifically *not* try to define the underlying structures or their status in terms of tone or fibrosity; simply assess the impact, if any, of inhalation on the tissues.
- Do the tissues resist, restrict, bind or do they stay relaxed?
- Compare what is happening under one hand with what is happening under the other during inhalation.
- Reverse the roles and have your partner assess you in the same manner to see which hand palpates the area of greatest bind on your inhalation.

**Exercise 2(b)** The time suggested for this exercise is 5–7 minutes.

- Go back to the starting position where you are palpating your original partner, who is seated with you standing behind.
- The objective this time is to map the various areas of 'restriction' or bind in the thorax, anterior and posterior, as your partner inhales.
- In this exercise try not only to identify areas of bind but to assign what you find into 'large' (several segments) and 'small' (single segment) categories.
- To commence, place a hand, mainly fingers, on (say) the upper left, upper thoracic area, over the scapula, and have your partner inhale deeply several times, firstly when seated comfortably, hands on lap, and then with the arms folded on the chest (exposing more the costovertebral articulation).
- After several breaths with your hand in one position resite the hand a little lower, or more medially or laterally as appropriate, until the entire back has been 'mapped' in this way.
- Remember that you are not comparing how the tissues feel on inhalation as compared with exhalation, but how different regions compare (in terms of ease and bind) with each other in response to inhalation.

- Map the entire back and/or front of the thorax in this way – for location of bind, and for 'size' of the restricted area(s).
- Go back to any 'large' areas of bind and see whether you can identify any 'small' areas within them, using the same simple contact and inhalation as the motion component.
- Individual spinal segments can also be mapped by sequentially assessing them one at a time as they respond to inhalations.
- Switch places, so that your partner now has the opportunity to assess you.
- As you sit having your thorax assessed, take the opportunity to ask yourself how you would normally handle the information you have uncovered in your 'patient':
  - Would you try in some way to mobilize what appears to be restricted?
  - If so, how?
  - Would your therapeutic focus be on the large areas of restriction or the small ones?
  - Would you work on areas distant from, or adjacent to, the restricted areas?
  - Would you try to achieve a release of the perceived restriction by trying to move it mechanically towards and through its resistance barrier, or would you rather be inclined to try to achieve release by some indirect approach, moving away from the restriction barrier?
  - Or, would you try a variety of approaches, mixing and matching until the region under attention was free or improved?

There are no correct or incorrect answers to these questions; however, the various exercises in this section (and elsewhere in the book) should open up possibilities for other ways being considered, ways which do not impose a solution but allow one to emerge.

**Exercise 2(c)** The time suggested for this exercise is 5–7 minutes.

- Go back to the original 'doctor/patient' setting, with your partner seated, arms folded on the chest, and you standing behind with your listening hand/fingertips placed on the upper left thorax, on or around the scapula area.
- Your motive hand is placed at the cervicodorsal junction, so that it can indicate to your partner your 'request' that she move forward of the midline (dividing the body longitudinally in the coronal plane), not into flexion but in a manner that carries the head and upper torso anteriorly.
- The movement will be found to be more easily accomplished if your partner has arms folded, as suggested above.

- The repetitive movement forwards, into the position described, and back to neutral, is initiated by your motive hand, while the listening hand evaluates the changes created by this.
- In effect you are comparing one palpated area with another, in response to this normal motion demand.
- As Johnston, Stiles and colleagues (1969) state: 'It is not anterior direction of motion compared with posterior direction, but rather a testing of motion into the anterior compartment only, comparing one area with the ones below and the ones above, and so on.'
- Your listening hand is asking the tissues whether they will respond easily or with resistance to the motion demanded of the trunk.
- In this way try to identify those areas, large and small, which bind as the movement forward is carried out.
- Compare these areas with those identified when the breathing assessment was used.

The patterns elicited in Exercise 2(c) involved movement initiated by yourself, whereas the information derived from 2(a) and 2(b) involved intrinsic motion, initiated by exaggerated respiration. Stiles and his colleagues have in these simple exercises taken us through the initial stages of palpatory literacy in relation to how tissues respond to motion that is self-initiated or externally induced.

### Implications

Other ways of using the information gathered during Exercise 2(c) are further expanded:

*In this particular testing what you have been doing is changing the positional relationship of the shoulders and the hips.*

*Clues about this shoulder-to-hips relationship, elicited at the restricted area in this way, can become criteria for you in picking the technique you may want to use to effectively change the specific dysfunction being tested ... We feel that a better chance of 'correction' may be established if you use a technique which will take the dysfunctional area and deal not only with the flexion-extension component, the side-bending and the rotation, but also see that the shoulders are properly positioned in relation to the hips. (Johnston et al 1969)*

Hoover (1969b) poses a number of questions in the following exercises (he calls them 'experiments'), the answers to which should always be 'yes'.

If your answers are indeed positive at the completion of the exercise then you are probably sensitive enough in palpatory skills to be able to use functional technique effectively in clinical settings.

### 3. Hoover's clavicle exercise

*(Hoover 1969a)*

**Exercise 3(a)** Suggested time for this exercise is 5 minutes. The question posed in this part of the exercise is: 'Does the clavicle move in a definite and predictable manner?'

- Stand facing your seated partner and place the pads of the fingers of your right hand (listening hand) onto the skin above the right acromioclavicular joint.
- With your left hand, hold the right arm just below the elbow.
- Ensure that your partner is relaxed and that you have the full weight of the arm and that there is no attempt to assist or hinder in any way, as the exercise is carried out (Fig. 6.1).
- Ensure that you have this cooperation by raising and lowering the arm several times.
- Slowly and deliberately take the arm back from the midline, just far enough to sense a change in the tissues under your palpating hand, and then return it to neutral.
- Avoid quick movements so that the sensations being palpated are accurately noted.
- Repeat this movement several times so that this single movement's influence can be assessed.
- Recall the question posed by Hoover for consideration, as you make this passive movement of the arm.



**Figure 6.1** Assessing for positions that induce ease or bind in the acromioclavicular joint. The fully supported arm is passively moved in various directions (Hoover 1969b).



- Now take the arm forward of the midline, until you sense a tissue change under your listening hand's fingertips.
- Repeat this single movement several times; forward and back to neutral, repeat and repeat, assessing all the while.
- Introduce abduction of the arm from its neutral position and then return it to neutral several times.
- Then introduce adduction – bringing the arm across the front of the trunk slightly – before returning it to neutral.
- Repeat this several times.
- In a similar manner, starting from and returning to neutral, assess the effect on ease and bind of a slowly introduced degree of internal and then external rotation, conducted individually.
- What was the response of individual physiological movements to the question: 'Does the clavicle move in a definite and predictable manner?'

The answer to the question posed should be that the clavicle does indeed move in a definite and predictable manner when demands for motion are made upon it.

**Exercise 3(b)** Suggested time for this exercise is 5 minutes. The question posed in this exercise is: 'Are there differences in ease of motion and feeling of tissues of the clavicle when it is caused to move in different physiological motions?'

- Adopt the same starting position as in Exercise 3(a) and then move your partner's arm backwards into extension very slowly as you palpate tissue change at the lateral end of the clavicle.
- Compare the feelings of ease and bind as you then take the arm into flexion, bringing it forward of the body.
- Then compare the feelings of ease and bind as you abduct and adduct the arm sequentially, passing through neutral as you do so.
- Compare the ease and bind sensations as you internally and externally rotate the arm.
- In this exercise, instead of individual motion demands, assessed on their own, you have the chance to evaluate what happens in the tissues being palpated as opposite motions are introduced, sequentially, without a pause.
- The question posed asks that you decide whether there were directions of motion that produced altered feelings of ease in the tissues.
- The answer should be that, usually, there are indeed identifiable differences or aberrations of motion and tissue texture when the clavicle is caused to move in different physiological motions.

**Exercise 3(c)** Suggested time for this exercise is 5 minutes. The question posed in this exercise is: 'Can the differences of ease of motion and tissue texture be altered by moving the clavicle in certain ways?'

- Repeat the introductory steps and commence by *flexing* the arm, and bringing it forwards of the midline until you note the clavicle beginning to move and the texture under palpation changing to bind.
- Then move the flexed arm backwards into *extension* until the clavicle starts to move and the sensation of bind is noted.
- Between these two extremes lies a position of maximum ease, a position of physiological balance, in this plane of motion (forward and backward of the midline).
- It is this point of balance that you need to establish.
- Starting from this balanced point of ease, use the same guidelines for assessing the point at which the clavicle starts moving and bind is noted as you seek a point of balance between *abduction and adduction* of the arm.
- When you find the combined position of maximal ease, having explored flexion/extension and abduction/adduction, you will effectively have 'stacked' one position of ease onto another.
- Starting from that combined position of ease, you need to find the point of ease between the extremes where clavicle movement and bind are noted as you introduce internal and *external rotation*.
- Once this has been established you have achieved a reciprocal balance between the arm and the clavicle.
- If you were treating dysfunction in these tissues/structures you would maintain that combined ('stacked') position of ease for at least 90 seconds.

You should have effectively answered the question posed in Exercise 3(c), since it should now become clear that aberrations of motion and tissue texture can be changed by motion of the clavicle.

The experiment continues

Starting from this position of reciprocal balance, reassess, as you did in the first part of the whole exercise, all the individual directions of motion of the arm (flexion, abduction, etc.).

Unlike the first part of the exercise, however, you will not be starting from the position in which the arm hangs at the side, but rather from a point of dynamic balance in which the tissues are at their most relaxed.

What you are seeking now are single motions of the arm/clavicle which are free, which produce the least sense of bind and the greatest sense of ease, starting from this balanced position.

When such a motion is identified:

*This one motion is continued slowly and gently as long as the sensory hand reports improving conditions, if a state is reached in which movement in that one direction increases bind and does not make movement more easy and tissue texture more normal, the sequence of physiological motions are again checked. (Hoover 1969a)*

What Hoover (1969a) is taking us towards in this exercise is the point at which we no longer impose action on the body, but follow it – where we allow the tissues to guide us towards their most desired directions of motion and positional ease.

In effect, what he has done, if we can follow his instructions up to this point, is to bring us to the start of using functional technique clinically.

The process described above, of finding physiological, dynamic balance and then seeking the pathways of greatest ease for the tissues, is functional technique in action.

The further evolution of the process described (using the clavicle exercise), in which the tissues guide the operator, requires a great deal of practice.

Hoover (1969a) explains:

*The operator relaxes and becomes entirely passive as his sensory or listening hand detects any change in the clavicle and its surrounding tissues. A change in the clavicle and its surrounding tissues, if felt by the sensory hand, sends information to the reflex centers which relay an order to the motor hand to move the arm in a manner so as to maintain the reciprocal balance, or neutral. If this is the proper move there will be a feeling of increasing ease of motion and improved tissue texture. This process continues through one or more motions until the state of maximum ease or quiet is attained.*

#### 4. Hoover's thoracic exercise

*Hoover (1969b)*

**Exercise 4(a)** Suggested time for this part of the exercise is 4 minutes.

- Stand behind your seated partner, whose arms are folded across the chest.
- You should have previously assessed by palpation, observation and examination the thoracic or lumbar spine of your partner, and should now lightly place your listening hand on an area that appeared to be restricted, or in which the tissues are particularly hypertonic.
- Wait and do nothing as your hand 'tunes' in to the tissues.
- Make no assessments as to structural status.
- Wait for at least 15 seconds. Hoover says: 'The longer you wait the less structure you feel.

The longer you keep the receiving fingers still, the more ready you are to pick up the first signals of segment response when you proceed to induce a movement demand.'

- With your other hand, and by voice, guide your partner/model into flexion and then extension.
- The motive hand should apply very light touch, just a suggestion as to which direction you want movement to take place towards.
- The listening hand does nothing but waits to feel the functional response of the tissues – ease and bind – as the spinal segments and tissues move into flexion and then extension.
- A wave-like movement should be noted as the segment/area being palpated is involved in the gross motion demanded of the spine.
- Changes in the tissue tension under palpation should be noted as the various phases of the movement are carried out.
- Practice the assessment at various segmental levels, and areas of the back, and try to feel the different status of the palpated tissues during the phases of the process, as bind starts, becomes more intense, eases somewhat and then becomes very easy, before a hint of bind reappears and then becomes intense again.
- Decide where the *maximum bind* is felt and where *maximum ease* occurs. These are the key pieces of information required for functional technique as you assiduously avoid bind and home in on ease.
- Try also to distinguish between the bind that is a normal physiological response to an area coming towards the end of its normal range of movement, and the bind that is a response to dysfunctional restriction.
- Switch places and allow your partner to evaluate you in the same way.

**Exercise 4(b)** Suggested time for this part of the exercise is 3 minutes.

- Return to the starting position as in 4(a) and, while palpating an area of restriction or hypertonicity, induce straight side-bending to one side and then the other while assessing for ease and bind in exactly the same way as in 4(a) (where flexion and extension were the directions used).
- Change places and allow your partner to do this to you.

**Exercise 4(c)** Suggested time for this part of the exercise is 3 minutes.

- Return to the starting position as in 4(a) and 4(b) and, while palpating an area of restriction or hypertonicity, induce rotation to one side and then

the other while assessing for ease and bind in exactly the same way as in 4(a) and 4(b).

- Change over to allow your partner to do this to you.

### Different responses

Hoover describes variations in what might be felt as the response of the tissues being palpated during these various positional demands.

**1. Dynamic neutral** This response to motion is an indication of normal physiological activity. There is minimal signaling during a wide range of motions in all directions. Hoover states it in the following way:

*This is the pure and unadulterated unlesioned (i.e. not dysfunctional) segment, exhibiting a wide range of easy motion demand–response transactions.*

**2. Borderline response** This is an area or segment which gives some signals of some bind fairly early in a few of the normal motion demands. The degree of bind will be minimal and much of the time ease, or dynamic neutral, will be noted. Hoover states that ‘most segments act a bit like this’; they are neither fully ‘well’ nor ‘sick’.

**3. The lesion response** This is where bind is noted almost at the outset of almost all motion demands, with little indication of dynamic neutral.

**Note** Terminology has changed and what was called a ‘lesion’ in Hoover’s day is now known as somatic dysfunction.

Hoover suggests that you should:

*Try all directions of motion carefully. Try as hard as you can to find a motion demand that doesn’t increase bind, but on the contrary, actually decreases bind and introduces a little ease. This is possible. This is an important characteristic of the lesion [dysfunction].*

Indeed, he states that the more severe the restriction the easier it will be to find one or more slight motion demands that produce a sense of ease or dynamic neutral, because the contrast between ease and bind will be so marked.

### Hoover’s summary

Practice is suggested with dysfunctional joints and segments in order to become proficient.

Three major ingredients are required for doing this successfully, according to Hoover (1969b):

1. A focused attention to the process of motion demand and motion response, while whatever is being noted is categorized, as ‘normal’, ‘slightly dysfunctional’, ‘frankly or severely dysfunctional’, and so on.

2. A constant evaluation of the changes in the palpated response to motion in terms of *ease* and *bind*, with awareness that these represent increased and decreased levels of signaling and tissue response.
3. An awareness that in order to thoroughly evaluate tissue responses, all possible variations in motion demand are required, which calls for a structured sequence of movement demands.

Hoover suggests that these be verbalized (silently): *Mentally, set up a goal of finding ease, induce tentative motion demands until the response of ease and increasing ease is felt, verbalize the motion-demand which gives the response of ease in terms of flexion, extension, side-bending and rotation. Practice this experiment until real skills are developed. You are learning to find the particular ease-response to which the dysfunction is limited.*

In addition, depending upon the region being evaluated, the directions of abduction, adduction, translation forwards, translation backwards, translation laterally and medially, translation superiorly and inferiorly, etc., may need to be factored into this approach.

Greenman’s functional exercise, below, introduces some of these elements.

### Bowles describes the goal

Bowles (1964) summarizes succinctly what is being sought during such processes of assessment:

*The activity used to test the segment (or joint) is largely endogenous, the observing instrument is highly non-perturbational, and the information gathered is about how well or how poorly our segment of structure is solving its problems. Should we find a sense of easy and non-distorted following of the structures, we diagnose the segment as normal. If we find a sense of binding, tenseness, tissue distortion, a feeling of lagging and complaining in any direction of the action, then we know the segment is having difficulty properly solving its problems.*

The diagnosis would be of dysfunction.

### 5. Greenman’s (1989) spinal ‘stacking’ exercise

The recommended time for this exercise is 10 minutes.

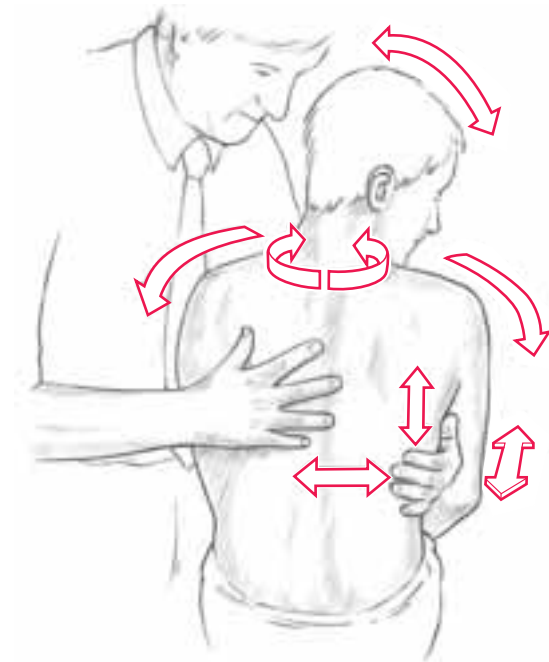
In previous exercises individual directions and some simple combinations of movement have been used to assess the response of the palpated tissues in terms of ease and bind.



In this exercise pairs of motion demands are made (e.g. flexion and extension). However, each of these assessments, after the first one, commences from the point of ease discovered in relation to the previous motion demand assessed.

In this way, the ultimate position of maximal ease, of dynamic neutral, is equal to the sum of all the previously achieved positions of ease so that one position of ease is literally 'stacked' onto another.

- Stand behind your seated partner, whose arms are crossed on their chest, hands on shoulders.
- Place your listening hand on an upper thoracic segment and take your other arm across and in front of your partner's folded arms to embrace their opposite shoulder or lateral chest wall.
- Motion demands are made by verbal instruction as well as by slight encouragement from the motive hand.



**Figure 6.2** Functional palpation (or treatment) of a spinal region/segment during which all possible directions of motion are assessed for their influence on the sense of 'ease and bind' in the palpated tissues. After the first position of ease is identified (sequence is irrelevant) each subsequent assessment commences from the position of ease (or combined positions of ease) identified by the previous assessment(s) in a process known as 'stacking'.

- A series of assessments is made for ease (Fig. 6.2) in each of the following pairs of direction:
  - flexion and extension
  - side-bending in both directions
  - rotation in both directions
  - translation anteriorly and posteriorly
  - lateral translation in both directions
  - translation cephalad and caudad (traction and compression)
  - full inhalation and full exhalation.
- The last investigation should be of the influence on ease of the different phases of breathing, full inhalation and full exhalation. However, apart from this, the sequence in which the other movements are performed is irrelevant, as long as they are all introduced so that each subsequent motion demand commences from the position of ease previously discovered.
- The final respiratory demand indicates in which phase of breathing the most ease in the tissues is noted, and once this has been established that phase is 'stacked' onto the combined position of ease previously developed, and is held for anything from 90 seconds, after which the position of neutral is slowly readopted before the entire stacking sequence is performed again.

## 6. Exercise in cervical palpation

**Note** This is a modification of Greenman's (1989) exercise in which he suggested use of muscle energy technique to treat whatever restrictions are located when testing translation restrictions. In this variation, positional release (functional) techniques are suggested instead; however, the basic design of the exercise is as described by Greenman.

To easily palpate for side-flexion and rotation, a side-to-side *translation* ('shunt') movement is used, with the neck in one of three positions – neutral, moderate flexion and extension.

As a segment is translated to one side it automatically creates a side-flexion effect and, because of the anatomical and physiological rules governing it, *rotation to the same side occurs* (Mimura et al 1989).

This spinal coupling feature appears to be a predictable universal event in the cervical spine (i.e. side-flexion and rotation to the same side); however, coupling in the remainder of the spine, while universal, is less predictable (Gibbons & Tehan 1998).

In order to evaluate cervical function using this knowledge, Greenman suggests that the practitioner places the fingers as follows, on each side of the spine (Fig. 6.3A, B):

- The supine patient's occiput rests on the practitioner's thenar eminences.



**Figure 6.3A and B** Functional assessment and/or treatment of the cervical area involving translation/rotation restrictions. (From Chaitow 2001.)

- The index finger pads rest on the articular pillars of C6, just above the transverse processes of C7, which can be palpated just anterior to the upper trapezius.
- The middle finger pads will be on C6, and the ring fingers on C5, with the little finger pads on C3. Then:
  - With these contacts it is possible to examine for sensitivity, fibrosis, and hypertonicity, as well as to apply lateral translation to cervical segments with the head in neutral, flexion or extension.
  - In order to do this effectively, it is helpful to stabilize the superior segment to the one being examined.
  - The heel of the hand helps to control movement of the head.

- With the head/neck in relative neutral (no flexion and no extension), translation to the right and then left is introduced (any segment) to assess freedom of movement (and by implication, side-flexion and rotation) in each direction.
- Say C5 is being stabilized with the finger pads, as translation to the left is introduced, the ability of C5 to freely side-flex and rotate on C6 is being evaluated when the neck is in neutral.
- If the joint (and/or associated soft tissues) is normal, this translation will cause a gapping of the left facet and a 'closing' of the right facet as left translation is performed, and vice versa.
- There will be a soft end-feel to the movement, without harsh or sudden braking.
- If, however, translation of the segment towards the right from the left produces a sense of resistance/bind, then the segment is restricted in its ability to side-flex left and (by implication) to rotate left.
- If translation right is restricted, then (comparatively) translation left will be more 'free'.
- If such a restriction is noted, the translation should be repeated, but this time with the head in extension instead of neutral.
- This is achieved by lifting the contact fingers on C5 (in this example) slightly towards the ceiling before reassessing the side-to-side translation.
- The head and neck can also be taken into slight flexion, and left-to-right translation again assessed.
- The objective is to ascertain which position (neutral, flexion, extension) creates the greatest degrees of *ease* and *bind* as any particular translation occurs.
- By implication if translation left (whether in neutral, extension or flexion) is the most free, then translation in the opposite direction would be more restricted.
- Because of spinal coupling rules, this indicates that rotation is also more restricted in the direction opposite that in which translation was most free (i.e. greater freedom of translation left suggests greater restriction of rotation right).
- The question the assessment is asking is whether (at the segment being assessed) there is more freedom of translation movement in one direction or the other, in neutral, extension or flexion.
- If this freedom of movement is greater with the head extended, or neutral, or flexed, then that is the position to be used in treating any dysfunction or imbalance (as indicated by greater restriction in translation in the opposite direction) at that segment.

- Hold the translation position for 90 seconds and then reevaluate the symmetry of translation movement.
- It should be more balanced.

### Functional treatment of the knee – a case study

Johnston (1964) describes the way in which an acute knee restriction might be handled using a functional approach.

He stresses that the description given is unique to the particular pattern of dysfunction existing in the patient under consideration, and that quite different patterns of dysfunction and therapeutic input would be noted in each and every acute knee problem treated. We need to consider, in each case, 'this particular patient with this particular problem'.

A young male patient is described who had a painful left knee, of 3 months duration, which could not fully straighten following a period of extensive kneeling.

On examination, the left leg remained slightly flexed at the knee, with tissues in the region somewhat warmer and more congested than in the normal right knee. Extension of the knee was painful and produced a rigid resistance as well as subjective pain.

- Standing on the left of the patient the operator placed his right hand so that the palm was in contact with the patella, the thumb encircled the knee to contact the lateral aspect of the joint interspace while the second finger was in contact with the medial joint interspace.
- This *listening hand* maintained a contact light enough to appreciate subtle changes in tissue status (the sense of tension and rigidity in the tissues – described as bind) while also being able to assist in subsequent motion introduced by the other hand.
- The left hand firmly held the patient's left ankle (Fig. 6.4A).
- Initially the extreme sense of bind was assessed by slightly yet forcibly taking the joint into extension – straightening the leg a little.
- As the knee was then returned to its position of slight flexion the sense of ease was noted.
- Various directions of motion were then explored and evaluated for the response of ease and bind.
- This has the purpose of 'mapping out an enlarging pattern for the response of decreasing bind'.
- The knee was then moved into greater degrees of flexion, both elevated from the table and with the upper leg hanging below the edge of the table (Figs 6.4B and C).



**Figure 6.4A** Johnston's (1964) exercise for 'mapping out an enlarging pattern for the response of decreasing bind' in a knee joint.



**Figure 6.4B** Commonly a position of ease for the knee will be found in which introduction of hip and knee flexion is followed by the lower leg being internally rotated and abducted, while tissue status is monitored in the knee area.



**Figure 6.4C** An alternative position of ease for the strained knee may be found in which the hip is slightly extended and abducted while the lower limb is taken into flexion, abduction and/or internal rotation.

- Various motions were assessed, including abduction and adduction of the lower limb, internal and external rotation of the lower leg.
- The greatest degree of ease was noted by the listening hand when the hip was flexed, the knee was markedly flexed and the lower leg was internally rotated and abducted.

#### Painless approach

Johnston highlights the value of such an approach in a painful condition:

*Even when this testing involved the potentially painful ranges of motion, the increasing binding response at the fingertips is so immediate and is so dramatic a signal to the operator that the ranges need barely be entered.*

- Treatment was carried out, following this evaluation sequence, with the supine patient's leg supported as in the assessment process.
- The limb was raised to clear the table and taken into semi-flexion, as a torsion arc of internal rotation and abduction was introduced by the operator's left hand (holding the ankle), while the right hand monitored the response of the tissues around the knee, as well as supporting the knee in its flexed position.
- Alternative ranges and motions were occasionally tested during the procedure in order to 're-clue' the

operator's right hand to the sense of immediately increasing bind.

- With the knee markedly flexed, the thigh slightly abducted, and the lower leg held in its 'ease' position of internal rotation and abduction, a 'sudden change' in tissue tension was noted, which allowed a sense of freedom as the leg was returned to its resting position.
- It remained slightly flexed but with objectively less rigidity, an assessed improvement of around 15% in terms of its degree of acuteness.

#### Repetition of the whole process

Precisely the same sequence of assessment and treatment was then repeated once more. This repetition is not a precise repositioning of the knee in the previous position of ease, but rather a further evaluation during which a new ideal position of 'balanced neutral' is determined by the process of palpation and motion.

Having gone through this process once, the second sequence will usually reveal a slightly different pathway to a state of ease.

In this instance, Johnston informs us that the subsequent evaluation of the position of maximal ease for the dysfunctional knee differed slightly from the previous one, as did the therapeutic holding position.

After these two functional treatments, the degree of dysfunction in terms of restriction and pain was reduced by approximately 40%.

At subsequent visits the process was carried further towards normalization so that: 'After five office visits during four weeks of continued improvement in use, the leg was able to be rested comfortably straight and the binding was no longer discernible at the knee' (Johnston 1964).

It is the experience of those using functional technique that a less chronic, less 'organized' degree of dysfunction would respond more rapidly than one, such as the case described, in which soft tissue changes in response to the strained tissues had become established for several months.

This functional diagnostic and treatment process takes longer to describe than to accomplish, for, once the listening hand learns to evaluate ease and bind, and the operator learns to assess the variable positions open to motion, in any given setting, the whole process can take a matter of a very few minutes.

#### Functional treatment of the atlanto-occipital joint

This final 'exercise' is offered as a means of introducing functional technique methodology into clinical practice. It is almost universally applicable, has no contraindi-



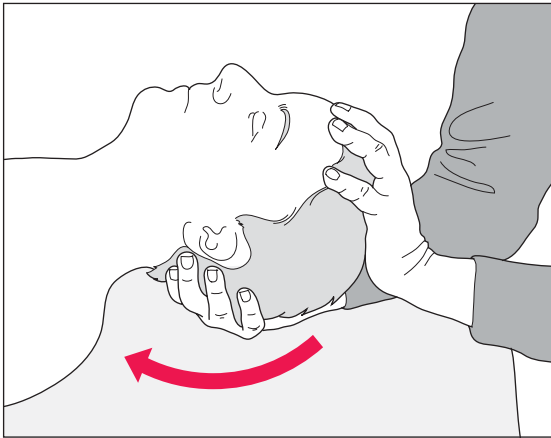
cations, and builds on the basic exercises in functional methodology described in this chapter.

The only situations in which it would be difficult or impossible to apply this method would be if the patient were unable to relax and allow the procedure to be completed, over a period of several minutes.

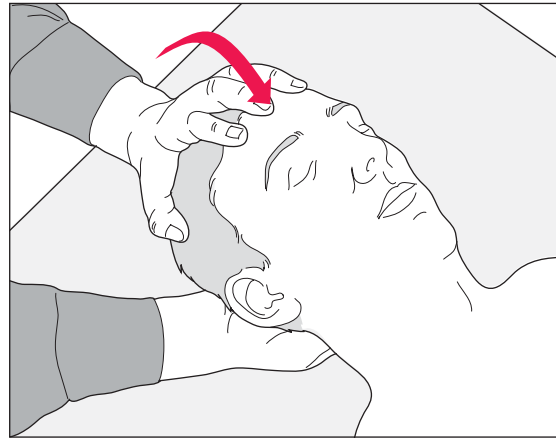
- The patient is supine.
- The practitioner sits at the head of the table, slightly to one side facing the corner of the table.
- One hand (caudal hand) cradles the occiput with opposed index finger and thumb palpating the soft tissues adjacent to the atlas.
- The other hand is placed on patient's forehead or crown of head.
- The caudal hand searches for feelings of 'ease' or 'comfort' or 'release' in the tissues surrounding the

atlas, as the hand on the head directs it into a compound series of motions, one at a time.

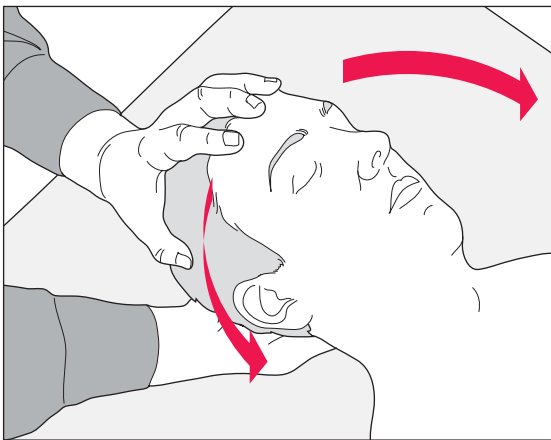
- As each motion is 'tested' a position is identified where the tissues being palpated feel at their most relaxed or easy.
- This position of the head is used as the starting point for the next element in the sequence of assessment.
- In no particular order (apart from the first movements into flexion and extension), the following directions of motion are tested, seeking always the position of the head and neck which elicits the greatest degree of ease in the tissues around the atlas, to 'stack' onto the previously identified positions of ease (Figs. 6.5A–G):
  - flexion/extension (suggested as the first directions of the sequence: Figs. 6.5A and B)



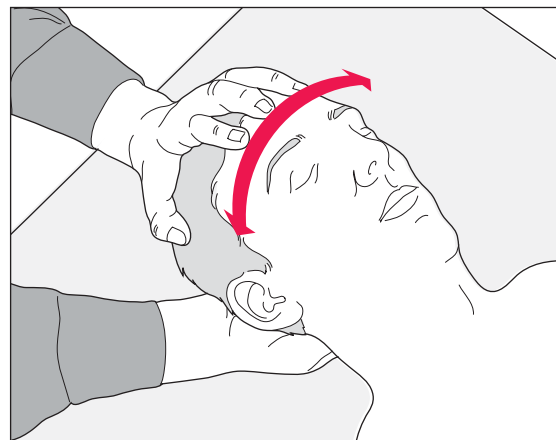
A



B

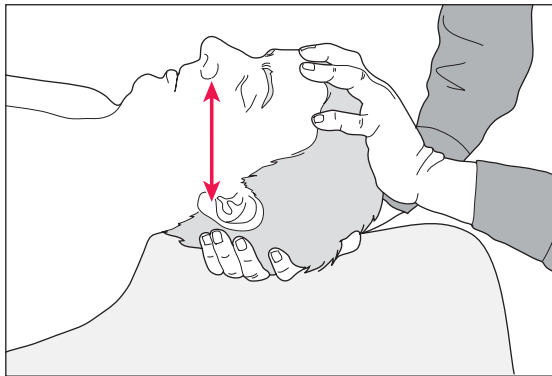


C

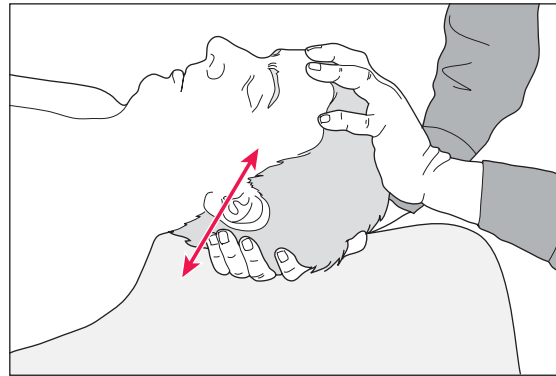


D

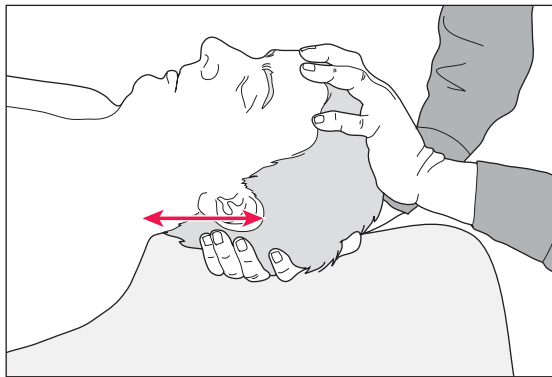
**Figure 6.5A–G** Functional atlanto-occipital joint release.



E



F



G

Figure 6.5A-G continued

- side-bending left and right (6.5C)
- rotation left and right (6.5D)
- anteroposterior translation (shunt, shift) (6.5E)
- side-to-side translation (6.5F)
- compression/traction (6.5G)
- Once 'three-dimensional equilibrium' has been ascertained (known as dynamic neutral), in which a compound series of ease positions have been 'stacked', the patient is asked to inhale and exhale fully – to identify which stage of the breathing cycle enhances the sense of palpated 'ease' – and the patient is asked to hold the breath in that phase of the cycle for 10 seconds or so.
- The final combined position of ease is held for 90 seconds before *slowly* returning to neutral.

Note that the sequence in which directions of movements are assessed is not relevant – provided as many variables as possible are employed in seeking the combined position of ease.

The effect of this held position of ease is to allow neural resetting to occur, reducing muscular tension,

and also to encourage improved circulation and drainage through previously tense and possibly ischemic or congested tissues.

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