**Stage of Condition**

Acute: typically less than 6 weeks duration this mirrors the inflammatory phase of the condition. Pain will typically limit activities and other symptoms such as muscle spasm, pain inhibition of muscles and swelling maybe present.

Sub-acute: typically 6-12 weeks duration, this mirrors the remodelling phase of the condition. Pain will be less dominant and will typically only occur when the healing tissue is over loaded. Swelling will have resolved and deconditioning maybe present.

Chronic: symptoms for more than 3 months duration, this is past the normal healing time for tissues. There may be other factors that are maintaining the pain such as central sensitisation, on-going pathology or psychosocial factors

Acute on chronic: on-going pathology can cause chronic pain but the patient may get acute flare ups of pain and swelling during this time.

**Mechanism of injury**

Insidious onset – symptoms that come on gradually over a period of time. This could indicate pathological changes, the aging process or repetitive strain / micro trauma to the tissues such as an over use injury or postural strain / muscle imbalance.

Specific event – the patient can recall a specific event that resulted in tissue injury e.g. an ankle inversion injury

**Aggravating and Easing Factors**

Aggravating factors are movements, activities of daily living or postures that increase your patient’s symptoms. It is important to ask for timings from your patient – this will allow you to work out the irritability of the condition.

Consider these examples:

e.g. sitting at a desk brings on my pain

e.g. sitting at my desk for ½ an hour brings on my pain

e.g. sitting at my desk brings on my pain immediately

Easing factors are movements, activities of daily living or postures that reduce your patient’s symptoms. It is important to ask for timings from your patient – this will allow you to work out the irritability of the condition.

Consider these examples:

e.g. getting up and moving around eases my pain

e.g. getting up and moving around eases my pain after about ½ hour

e.g. getting up and moving around eases my pain immediately

**Description of Pain**

Genics are used to describe the source of the symptoms:

Arthrogenic Pain

Arthrogenic pain relates to the joint and related structures such as the joint capsule, menisci, labarum and ligaments.

Common pain description for arthrogenic pain is:

* Deep pain
* Nagging pain
* Dull pain
* Common pain description for arthrogenic pain is:

Common pain description for fracture pain is:

* Sharp
* Severe
* Worse with movement
* Dull aching at night.

Myogenic Pain

Myogenic pain relates to the muscle and the relating structures relating such as the tendon, musculotendonous junction and oseostendonous junction.

Common pain description for myogenic pain is:

* Aching pain
* Dull pain
* Cramping pain

Neurogenic Pain

Neurogenic pain relates to the nerve which includes the spinal cord, nerve root and peripheral nerve and autonomic nerve

Common pain description for nerve root pain is:

* Pins and needles
* Commonly described as a sharp or shooting pain
* No diurnal pattern
* Maybe associated with sensory changes such as pins and needles and /or numbness in a dermatomal pattern
* May be associated with muscle weakness in a myotomal pattern
* Nerve root may be tender on palpation of surrounding structures.
* Often no clear aggravating and easing factors but may be present if associated with disc or space occupying lesion.

Common pain description for peripheral nerve pain is:

* Pins and needles
* Difficulty in explaining the kind of pain often describing bizarre sensations such as: tooth ache, burning, electric shocks, like lightening, ants crawling, running water etc.
* No diurnal pattern
* Maybe associated with sensory changes such as pins and needles and /or numbness in a peripheral nerve skin supply pattern.
* May be associated with muscle weakness in a peripheral nerve muscle supply pattern.
* Peripheral nerve may be tender on palpation.
* Often no clear aggravating and easing factors but may be present if associated with disc or space occupying lesion.

Common pain description for autonomic nerve pain is:

* Stinging, aching, pressure like description of pain.
* Difficulty in explaining the kind of pain often describing bizarre sensations such as: tooth ache, burning, electric shocks, like lightening, ants crawling, running water etc.
* No diurnal pattern
* Maybe associated with sensory changes such as pins and needles and /or numbness in unusual pattern. I.e. Not a dermatomal or peripheral nerve pattern.
* Swelling is often present
* Erythema or redness of the skin
* Skin often appears shiny.
* Unusual areas of hair growth.

Discogenic Pain

Discogenic pain relates to the spinal discs

Common pain description for discogenic pain is:

* Pain on flexion is sharp and shooting.
* Pain on flexion and rotation is sharp and shooting
* Commonly associated with nerve root neurogenic symptoms
* Excruciating pain when server
* Constant and unremitting when sever with loss of extension range.

Vasculogenic Pain

Vasculogenic pain relates to any part of the vascular system.

Common pain description for vascular pain is:

* Throbbing
* Diffuse
* Intermittent with movement.
* Deep
* Aching

Viscerogenic Pain

Viscerogenic pain relates to any viscera. Eg. Kidney, Liver, Gut, Heart.

Common pain description for visceral pain is:

* Dull ache
* Burning pain
* Stabbing pain
* Heart – central chest pain, left arm pain
* Pancreas – left waistline – anterior and posterior
* Gall bladder – right waistline - anterior
* Appendix – right lower quadrant - anterior
* Kidney – lower quadrant left to hip and right
* Colon – Left groin

Inflammatory pain

Inflammatory pain relates to pain stimulated by chemicals of inflammation.

Common pain description for inflammatory pain is:

* Clear diurnal pattern = early morning stiffness, eases with movement (5-30mins), mornings feels better, worse as day progresses.
* Unclear aggravating and easing factors.
* Dull ache
* Throbbing
* Constant but variable
* Often high irritability.

Mechanical pain

Mechanical pain is nociceptor activation in musculoskeletal tissue due to pressure build up and release with changes of position.

* Clear aggravating and easing factors
* Stimulated by strong mechanical stimulus.
* sharp
* Often an on / off pain with low irritability

Pain from a Serious Pathology

Red flags may be indicators of serious pathology (please see link on red flags for more information)

Descriptors of red flag symptoms are typically:

Unremitting pain that does not change with a change in position / posture

Unremitting pain that worsens at night

Pain that causes someone to wake in the night.

For further information please see…

* Greenhalgh, S., Selfe, J., 2009. *Red Flags: A guide to identifying serious pathology of the spine (physiotherapy pocket books).* Edinburgh: Churchill Livingstone.

Pain associated with a dysfunctional pain system

Pain that extends beyond the expected period of healing may be due to a dysfunctional pain system. This may be for several reasons

1. Psychological or social factors leading to maintaining of the painful symptoms. Pain maintained by psychosocial factors can be identified using the “Yellow flag” system. (please see link on yellow flags for more information).
2. Central pain sensitisation - Allodynia
3. Complex regional pain syndrome

Care must be taken to differentiate from those who have recurrent episodes of pain.

People presenting with a dysfunctional pain system typically…

* The severity of the patient’s pain may not mirror their observed functional ability
* The patient may describe emotional factors
* Allodynia – Triggering a pain response from a stimuli which do not normally provoke pain
* Hyperalgesia – increased sensitivity to pain. An extreme or exaggerated reaction to a stimulus which is normally painful.
* Variable or inconsistent descriptions of pain.
* Belief that pain is harmful or disabling
* Belief that pain must be gone before attempting any activities
* Belief that pain is uncontrollable
* VAS score may be above 10

For further information please see…

* New Zealand Guidelines Group., 2004. *New Zealand Acute Low Back Pain Guide*. Wellington: ACC

**Anatomy Texts and Anatomy TV**

Anatomy Text References

Standring, S. 2015. *Gray’s Anatomy: The anatomical basis of clinical practice 41e.* London: Elsevier.

Palastanga, N. and Soames, R.W. 2012. *Anatomy and Human Movement: Structure and Function. 6th ed.* London: Churchill Livingstone.

Anatomy TV

### Anatomy TV

[On-Campus Link](http://www.anatomy.tv/) | [Off-Campus Link](http://libezproxy.bournemouth.ac.uk/login?url=http://www.anatomy.tv)

* **Subject coverage:** online, interactive version of the world's most detailed 3D model of the human anatomy
* **Type of content:** interactive 3-D images, quizzes, multiple choice questions.

**Note:** Access is limited to 5 simultaneous users

**Note for off-campus use:** the off-campus connection link above is the only off-campus access route for this resource

BU staff/student login required for off-campus access (Ezproxy)

**Visual and Verbal Analogue Scales**

These scales are used to gain a descriptive measure of your patient’s pain. This measure will be individual to your patient’s pain threshold but can give you a subjective measure of their pain in order to assess its severity and how it changes with certain movements/ activities and also to measure effects of treatment on the pain. The patient is asked to rate their pain in relation to the worst pain they have ever experienced, there are some examples of different versions of this below: Generally a rating over 7/10 is considered severe.

Verbal Descriptor Scale

None – Mild – Moderate - Severe

Visual Analogue Scale

The person marks along a 10cm line where they would rate their pain. A measurement is then taken from the beginning of the line to provide a pain score.

no pain ---------------------------------------------------- worst pain

Numerical Rating Scale

“On a scale of zero to ten (0-10), with zero being no pain and ten being the worst pain you can imagine, What number would you give your pain?”

**SIN Factor**

The SIN factor allows you to consider aspects of the presentation in more detail to aid decision making at two different times in the assessment process

* Firstly, following the subjective interview the SIN factor guides the planning of the objective assessment.
* Secondly, after the objective assessment the SIN factor guides decision making for the final clinical impression.

SIN stands for…

S = Severity

I = Irritability

N = Nature.

Severity

Severity describes how painful the symptoms are. This can be judged by considering…

* Description of pain
* Pain scores using a Visual or Verbal rating scale
* How much pain impact on activity levels. Ie. Does it stop or limit them. This would also take into account the level of activity.
* Does the pain disturb sleep
* Levels, frequency, type of analgesic medication.
* Response to palpation
* Response to movement
* Response to objective physical examination

Severity is graded

Non Painful – Mild – Moderate – Severe

Irritability

Irritability describes the relationship between the aggravating and easing factors and the associated timescales. *(For further information see aggravating and easing factors)*

This can be judged by considering…

* How quickly the symptoms increase with an aggravating activity
* How long the symptoms last when present
* How quickly the symptoms decrease to resting level again with an easing activity.
* Time scales are important to make this judgement.
* The kinds of aggravating factors
* The kinds of easing factors

Irritability is graded

Non Painful – Mild – Moderate – Severe

Nature

Nature describes the source of symptoms.

The source of symptoms can be described using four main frameworks

1. Genics
2. Inflammatory versus Mechanical
3. Pain versus Resistance
4. Improving versus Worsening
5. Genics

*Arthrogenic* = relates to the joint and related structures such as the joint capsule, menisci, labarum and ligaments.

*Myogenic* = relates to the muscle and the relating structures relating such as the tendon, musculotendonous junction and oseostendonous junction.

*Neurogenic* = relates to the nerve which includes the spinal cord, nerve root and peripheral nerve and autonomic nerve

*Discogenic* = relates to the spinal discs

*Vasculogenic* = relates to any part of the vascular system.

*Viscerogenic* = relates to any viscera. Eg. heart, pancreas, gall bladder, appendix, kidney.

*Psychogenic* = relates to symptoms caused or maintained by psychological factors.

*Sociogenic* = relates to symptoms caused or maintained by social factors.

Genics are graded by a percentage.

Ie. What percentage is likely to be from each genic. If a genic is not considered a source of symptoms it is best practice to identify it as 0%. The score from all the genics should add up to 100%.

1. Mechanical versus inflammatory

Inflammatory pain relates to pain stimulated by chemicals of inflammation.

Common pain description for inflammatory pain is:

* Clear diurnal pattern = early morning stiffness, eases with movement (5-30mins), mornings feels better, worse as day progresses.
* Unclear aggravating and easing factors.
* Dull ache
* Throbbing
* Constant but variable
* Often high irritability.

Mechanical pain is nocioceptor activation in musculoskeletal tissue due to pressure build up and release with changes of position.

* Clear aggravating and easing factors
* Stimulated by strong mechanical stimulus.
* sharp
* Often an on / off pain with low irritability

Inflammatory versus Mechanical is graded by a percentage.

Ie. What percentage is likely to be from each component? If a component is not considered a source of symptoms it is best practice to identify it as 0%. The score from all the components should add up to 100%. It is often presented as a ratio.

For example: Inflammatory 50:50 Mechanical

Inflammatory 100:0 Mechanical

1. Pain versus Resistance

Pain versus resistance identifies how much of the problem is associated with the pain and how much is associated with resistance.

Pain versus Resistance is graded by a percentage.

Ie. What percentage is likely to be from each component? If a component is not considered a source of symptoms it is best practice to identify it as 0%. The score from all the components should add up to 100%. It is often presented as a ratio.

For example: a high severity and high irritability may make it impossible to assess for any resistance. The person may describe no symptoms of stiffness. Therefore they would be

Pain 100: 0 Resistance

For example, a non-severe and non-irritable problem but on physical examination there is significant resistance to active, passive or accessory movements with no pain reproduction on these tests.

Pain 0: 100 Resistance

1. Improving versus Worsening

Improving versus Worsening identifies the natural progression of the problem

Improving versus Worsening is graded by a percentage.

Ie. What percentage is likely to be from each component? If a component is not considered a source of symptoms it is best practice to identify it as 0%. The score from all the components should add up to 100%. It is often presented as a ratio.

The SIN factor allows you to consider aspects of the presentation in more detail to aid decision making at two different times in the assessment process

* Firstly, following the subjective interview the SIN factor guides the planning of the objective assessment.

For example, a presentation with high severity and high irritability would need an objective assessment with the minimal number of physical tests to avoid making the condition worse.

For example, a presentation with a high myogenic component would require a high number of muscle tests to be conducted in the objective examination.

For example, if the neurogenic component is considered to be 0% then it is unlikely that any neurogenic physical assessments are required in the objective examination.

For example, a condition with a high inflammatory component should consider the time of day the assessment is taking place. It may also consider more carefully the order of aggravating and easing tests or how the physical tests are conducted.

* Secondly, after the objective assessment the SIN factor guides decision making for the final clinical impression.

For example, a presentation with high severity and high irritability may just have a clinical impression identifying these components and the goals and treatment plan will be designed around managing this prior to further assessment.

For example, a presentation with a high myogenic component would require the clinical impression to be mostly based around a myogenic structure.

For example, if the neurogenic component is considered to be 0% then it is unlikely that a neurogenic component should be considered in the clinical impression, it would not be included in the problem list and there should be no neurogenic based treatments.

For example, a conditions with a high inflammatory components should consider carefully the time of day for treatment sessions and if anti-inflammatory medications have been taken.

**Diurinal Patterns**

How the symptoms vary over a 24 hour period gives you information which can help inform the SIN factor.

Pain at night may indicate a ‘red flag’ or indication of more serious pathology, night waking may demonstrate a high severity. If night waking is present – don’t forget to ask if the symptoms change with a change of position or number of pillows.

Pain and stiffness first thing in the morning that eases with movement can indicate an inflammatory problem or a disc prolapse.

Symptoms that are worse by the end of the day or after repeated or sustained activity can indicate inflammation.

**Red flags**

Reference

Greenhalgh, S., Selfe, J., 2009. *Red Flags: A guide to identifying serious pathology of the spine (physiotherapy pocket books).* Edinburgh: Churchill Livingstone.

Powerpoint

Add power point presentation

**Yellow flags**

Reference

New Zealand Guidelines Group., 2004. *New Zealand Acute Low Back Pain Guide*. Wellington: ACC

<http://www.acc.co.nz/PRD_EXT_CSMP/groups/external_communications/documents/guide/prd_ctrb112930.pdf>

Powerpoint

Add power point presentation

**Healthy lifestyles**

<http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-adults.aspx>

**ICE**

The acronym ICE stands for

**I** = Ideas

**C** = Concerns

**E** = Expectations

The ICE acronym is used to aid the exploration of individuals’ thoughts of their own condition. These questions explore the individuals’ knowledge of the condition, previous diagnosis, any worries the patient has which can then link to any yellow flags and often clarify the focus for constructing individual centred goals.

Ideas

*“Do you have any ideas of what may be causing your symptoms? This may be based on how it feels, for example, does it feel like a muscle, ligament or joint problem? Or it may be based on things other professionals have diagnosed? Or from your own research, for example on the internet? “*

Concerns

*“Do you have any concerns about the problem? This may be based on how it feels, or what other health professionals have said to you? Or from your own research, for example on the internet?"*

Expectations

*“Do you have any expectation of physiotherapy? Are there any particular treatments that you have received before that you think may be beneficial? Or any treatments you have read about that you think may be helpful? What do you want to get out of physiotherapy?”*

**Prognosis**

The prognosis is an estimate of the likely outcome from the current state of the condition.

For this purpose the prognosis needs only identify if the condition is improving, static or worsening.

Improving

A condition that is already showing signs of improvement and recovery. Physiotherapy would be aimed at facilitating the ongoing improvement and recovery, possibly speeding up the recovery and ensuring no complications to the recovery.

Static

A static condition is not showing signs of natural recovery or improvement nor showing signs of worsening. The condition has remained the same for a period of time.

Worsening

A worsening condition is showing signs of deterioration. This may be due to repeated or repetitive injury, infection or an indication of a more serious pathology. The condition is not recovering as expected following the normal healing process.

**Cautions and Precautions**

Cautions

Cautions are findings from your subjective interview that would prevent the inclusion of specific objective physical assessment tests. They also identify any findings from the subjective interview that may be a cause you concern.

* Aggravating movements with moderate- high severity or moderate-high irritability
* High inflammatory component to the problem.
* Red Flags
* Yellow flags
* Related to specific suspected pathological processes
* Strong pain medication
* Osteoporosis
* Diabetes
* Epilepsy
* Previous or known cancer
* Cardiovascular health
* Previous fractures close to the site of current symptoms
* Surgical procedures in last year
* Hypermobility / instability
* Pregnancy

For example, if a shoulder flexion is described as instantly painful, causing a pain rated 9/10 VAS, that would then take several days to relieve. Then this movement may be identified as a caution and not included in the physical assessment.

For example, if a person is identified as having vascular pathology which is not well controlled, then any form of cervical mobilisation or manipulation would be a caution and not included in the physical assessment.

Precautions

Precautions are findings that may mean you change how you perform certain objective physical tests or affect the order that the tests are conducted. They also identify any finding from the subjective interview that may be a cause for concern. Precautions are like cautions but less severe.

* Aggravating movements with low-moderate severity or low-moderate irritability
* Low inflammatory component to the problem.
* Red Flags that are not interconnected
* Yellow flags that are mild or unconnected
* Related to specific suspected pathological processes
* Low grade pain medication
* Mild or osteoporotic changes
* Very well controlled Diabetes
* Very well controlled Epilepsy
* Cancer that has been in remission or cleared
* Well controlled cardiovascular problems
* Previous fractures away from the current symptoms
* Surgical procedures over a year ago.
* Hypermobility / instability

**Documentation**

CSP’s principles of good record keeping

http://www.csp.org.uk/professional-union/professionalism/professionalism-resources/record-keeping-guidance/documenting-h-0

Section 6 of the CSPs Quality Assurance Standards

http://www.csp.org.uk/professional-union/professionalism/csp-expectations-members/quality-assurance-standards/section-6--0

NHS professioanls: Record Keeping Guidelines

<http://www.nhsprofessionals.nhs.uk/download/comms/cg2%20-%20record%20keeping%20clinical%20guidelines.pdf>

Royal College of physicians: Standards for the clinical structure and content of patient records

<https://www.rcplondon.ac.uk/projects/outputs/standards-clinical-structure-and-content-patient-records>

**Observation**

Informal Observation

Informal observations should be made as people often adjust postures and movements during formal observation.

* + Walking into the clinic
  + Facial expressions
  + Ease of movement during Activities of daily living

Formal Observation

Formal observation should be made at the beginning of any objective physical assessment.

The person may be observed in a variety of different positions. It is important to standardise the position to minimise variations on re-assessment.

* Standing – Feet hip distance apart, or if able – march on the spot then stop.
* Sitting – Feet supported, back supported.
* Prone – If able – bridge, lower to bed, equal gentle distraction at both ankles.
* Supine – Equal gentle distraction at both ankles.
* Side Lying – consider positioning of legs.

The clinician should observe all views of the patient.

* Anterior
* Poster
* Lateral

Comparisons should be made between left and right sides and ‘known ideal’ alignment. Abnormal symmetry may be corrected to assess for any change in the symptoms.

The following may be observed…

* + Postural assessment
  + Muscle form
  + Soft tissue
  + Gait
  + Alignment
  + Skin creases
  + Erythma
  + Areas of sweating
  + Hair distribution
  + Skin quality
  + Signs of swelling
  + Observation of the person’s attitudes and feelings.

**Active Range of movement (AROM)**

Active range of movement involves the patient demonstrating specific physiological movements in different planes i.e. Flexion, extension, abduction, medial rotation. This may also involve performing:

* Repeated movements
* Speed of movement
* Combined movements
* Compression or distraction
* Sustained movements
* Injuring movement
* Differentiation tests
* Functional ability
* Capsular patterns

During these movements you would assess:

* Quality
* Range
* Pain reproduction

Measurement of AROM is made using a goniometer. Please see separate guidance on goniometry.

**Passive Range of Movement (PROM)**

Passive range of movement involves the therapist performing individual physiological movements for the patient; this eliminates muscle activity and therefore gives an indication of the range of movement of the passive structures.

This may also involve performing:

* Combined movements
* Compression or distraction
* Sustained movements
* Injuring movement
* Differentiation tests
* Functional ability
* Capsular patterns
* Over pressure

During these movements you would assess:

* Pain reproduction
* Quality
* Range
* End feel

**Goniometry**

Insert video clip (This needs a clip number for Vince)

Reference

Norkin., C. and White., J. 2009. *Measurement of Joint Motion: A guide to goniometry.* 4th ed. Philadelphia: F.A. Davis Company.

**Movement Diagrams**

Movement diagrams are a method of documenting assessment of passive range of movement and accessory movement. They are useful for students as a form of documentation to ensure they have gathered all the information from the assessment.

The diagram is based within this box drawing.

C D

|  |  |
| --- | --- |
|  |  |

A B

The baseline AB is the full range of joint movement.

The vertical axis AC depicts the intensity of pain, resistance or muscle spasm.

Resistence

R1 = Represents where resistance is first felt. Is drawn on the line AB.

R2 = Represents where resistance limits the movement. Is drawn on the line CD

R1 = Represents the point that there is no more information about resistance.

Pain

P1 = Represents where pain is first felt. Is drawn on the line AB.

P2 = Represents where pain limits the movement. Is drawn on the line CD

P1 = Represents the point that there is no more information about pain.

Spasm

S1 = Represents where spasm is first felt. Is drawn on the line AB.

S2 = Represents where spasm limits the movement. Is drawn on the line CD

S1 = Represents the point that there is no more information about the spasm.

Example

Central T2 P-A



P1

R1

R2 P2

This movement diagram represents and posterior to anterior central glide on the T2 spinous process. Resistance is first felt at one fifth of the way into the normal full range. The resistance quickly builds and limits that movement at approximately halve the full normal movement. Pain begins shortly after resistance is felt. Pain builds quickly to limit the accessory glide at the same point as resistance limits the movement.

References

Movement diagrams are described in detail by Maitland (Hengeveld and Banks, 2013 ) and Petty (2013) who both provide may worked examples.

Hengeveld., E. and Banks., K. 2013. *Maitland’s Vertebral Manipulations.* 8th ed. London: Churchill Livingstone

Petty., N.J. 2013. *Neuromusculoskeletal Examination and Assessment: A handbook for therapists.* 4th ed. London: Churchill Livingstone

**Palpation**

A good knowledge of anatomy is essential for accurate palpation. Palpation can help you locate the painful structure and identify any inflammation or scar tissue, other things you may look for when palpating are:

* Production of pain
* Temperature
* Skin moisture
* Oedema/effusion
* Muscle spasm
* Tenderness
* Bony prominence
* Trigger points
* thickening

**Stages of Healing**

<http://www.electrotherapy.org/assets/Downloads/tissue%20repair%202014%20Final.pdf>

**Accessory Movements**

Accessory movements are the movements of the joint which cannot be performed voluntarily by the patient and that are the movements of the joint that allow physiological movement to occur.

Assessment

The individual accessory movements can be performed in order to improve physiological movement. The accessory movement should replicate the natural slide, glide or spin of the joint surfaces during normal movement. This involves taking the joint though its full available range (as pain allows) and looking for:

* Quality
* Range
* Pain reproduction
* End feel
* Muscle spasm
* Increased movement (hypermobility)
* Decreased movement or resistance to movement

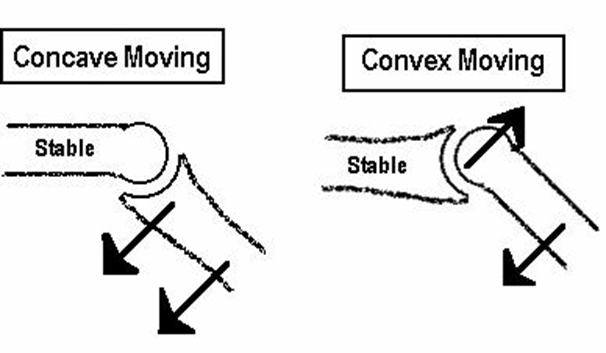
Convex / concave rule

All joint movement obeys the convex concave rule which describes which direction one surface of the joint will move when the other is fixed.

The rule is as follows:

The concave surface will slide in the **same direction** as the bone is moving in when the convex surface is stable.

The convex surface will slide in the **opposite direction** of the bone is moving in when the concave surface is stable.



Directions

The directions of accessory movement are as follows:

* A/P – anterior / posterior movement
* P/A – posterior /anterior movement
* Lateral Glide
* Rotation
* Caudal glide – towards the feet
* Cephalad glide – towards the head
* Distraction / traction – gapping joint surfaces

These are documented using the following symbols:

↓ PA

↑ AP

→← Medial glide

←→ Lateral glide

←→ (caud) Caudad

←→ (ceph) Cephalad

←→ Distraction

→← Transverse (spinal)

ↄ  **C** Rotation

↓ ↓ Unilateral

Contraindications to joint mobilisations

* Inflammatory arthritis (active)
* Infection
* Ca
* Hyper mobility / instability
* Osteoporosis
* Trauma ( <48 hours )
* Fracture
* Spondylolysthesis

Precautions to joint mobilisations

* Trauma (post 48 hours)
* Vertebral Basilar Insufficiency (VBI) signs
* Rheumatoid Arthritis
* Post whiplash
* Acute muscle spasm / guarding
* Neurology / Upper Motor Neurone signs
* Pregnancy (third trimester)

Weblink

<http://www.physio-pedia.com/Maitland's_Mobilisations>

**Muscle Tests**

Muscle testing

* Pain reproduction
* Strength
* Length
* Isometric
* Isotonic
* Inner/Middle/Outer
* Power
* Stamina
* Control
* Fatigue/ Endurance
* Symptom reproduction

Oxford grading scale

0 = No contraction

1 = Flicker or trace of contraction

2 = Active movement, with gravity eliminated

3 = Active movement against gravity

4 = Active movement against gravity and resistance

5 = Normal power

References

Kendall., F.P. and McCreary., E.K. 2010. *Muscle Testing and Function: Testing and function with posture and pain.* 5th ed. Philadelphia: Lippincott Williams and Wilkins

Websites

<https://www.mrc.ac.uk/documents/pdf/aids-to-the-examination-of-the-peripheral-nervous-system-mrc-memorandum-no-45-superseding-war-memorandum-no-7/>

**Neurological tests**

Neural integrity

Reflexes

Myotomes

Dermatomes

Light touch

Sharp/ blunt

Hot / cold

Neural mobility / neurodynamics

These tests examine the mobility of the nerve through the surrounding tissues.

* ULNDT1 (median nerve bias)
* ULNDT2a (Median nerve bias)
* ULNDT2b (Radial nerve bias)
* ULNDT3 (Ulna nerve bias)
* Slump test
* Straight leg raise (Sciatic nerve bias)
* Prone knee bend / Femoral slump (femoral nerve bias)

**Functional Testing**

Functional testing relates to observing a functional task, usually one the person is having difficulty doing. When assessing a functional movement observe for the ability to achieve the task, any compensatory movements and any muscle weakness, limited movement or pain reproduced during the task.

Examples of functional tests:

Drinking from a cup

Writing

Brushing hair

Picking something up off the floor

Removing shoes and socks

Sit to stand

Climbing or descending stairs

Squat (single leg / double leg)

Getting in and out of bed

Walking / running

**Special Tests**

Special tests relate to an individual test that looks for symptom reproduction from a specific individual structure.

Examples of special tests:

Thoracic outlet test

Hawkins and Kennedy test for shoulder impingement

Mc Murrays test for the meniscus of the knee

Apprehension test and relocation test for instability of the shoulder

References

Magee., D.J. 2014. *Orthopaedic Physical Assessment.* 6th ed. Philadelphia: Saunders

Petty., N.J. 2013. *Neuromusculoskeletal Examination and Assessment: A handbook for therapists.* 4th ed. London: Churchill Livingstone

**Writing a clinical impression**

The clinical impression summarises what is likely to be causing the symptoms. It is an impression based on signs and symptoms gathered from the subjective and objective assessment rather than a diagnosis.

Example clinical impression:

‘Acute right ankle anterior talo-fibular ligament (ATFL) sprain and associated strained peroneal muscles’

‘Chronic right C6-C7 facet joint pain and stiffness with associated C7 nerve root sensitisation and trapezius muscle shortening’.

**Writing a problem list**

Example problem list:

1. **Pain** – VAS sharp pain 6/10 and constant ache 1-3/10.
2. **ROM** – Limited active extension due to muscle pain.
3. **Muscle** – Pain on active wrist extension or stretch of wrist extensors.
4. **Nerve** – Altered skin sensation lateral aspect of thumb.
5. **Nerve** – Reduced neural mobility for the radial nerve.
6. **ADL** – Difficulty opening jars, dressing, writing, typing.
7. **Work** – Difficulty playing piano,
8. **Sport -** Unable to play tennis.

**Writing SMART goals**

S = Specific

M – Measureable

A – Achievable / Actionable

R – Realistic / Relevant

T – Timed

Example SMART Goals:

1. Pain free VAS 0/10 6/52
2. No Swelling of the ankle so L=R in 2/52
3. FROM right ankle 4/52
4. Negative ATFL test 6/52
5. Peroneals OS 4/5 in 8/52 - OS 5/5 in 3/12
6. Walking with assistance of 2 sticks 2/52, No aid 4/52, PWB-FWB. Safety on stairs with 2 e/c immediately. Safety on stairs – ongoing as NWB – PWB – FWB
7. Safe to travel to work 1/52. Restart Marathon training 8-12/52.

**Writing a Treatment Plan**

Here is an example of a patient’s problem list and the treatment plan. The numbers on the treatment plan relate to the treatment proposed to address each problem on the problem list:

Problem list

1. **Pain** – lateral aspect of right ankle and leg VAS 6/10
2. **Swelling** – lateral aspect of right ankle
3. **ROM** – DF -5°, PF 20°, In 5°, Ev 0°
4. **Joint –**  Positive ATFL test with PF & Inversion and with palpation
5. **Muscle** – Weakness of peroneals OS 2/5 as currently NWB & no AROM eversion
6. **Function** – Walking with assistance of 2 elbow crutches, NWB – PWB during assessment. Difficulty with stairs.
7. **Participation** –Unable to travel for charity work. Unable to train for marathon

Treatment plan

1a) Advise and education regarding diagnosis, prognosis and treatment plan.

1b) Ensure informed consent prior to all interventions.

1c) POLICE

1d) Electrotherapy, IF/TENS

2a) 1c

2b) SSTM lateral ATFL

2c) Friction (if req)

2d) Electrotherapy US

3a) 1cd, 2a-d

3b) AROM NWB Ankle DF,PF,Inversion, Eversion.

3c) Auto assisted Ankle ROM DF,PF,Inversion, Eversion.

3c) PROM NWB Ankle DF,PF,Inversion, Eversion.

4a) 1,2,3

5a) Isometric ankle exercises DF,PF,Inversion, Eversion.

5b) Isotonic ankle exercises DF,PF,Inversion, Eversion.

5c) Eccentric loading peroneal

5d) WB strengthening/ loading exercises

6a) Gait re-ed 2 e/c – 2 sticks – 1 stick – No aid

6b) Gait re-ed NWB-PWB-NWB

6c) 5a-d

6d) Balance re-ed – for walking

6e) Stairs assessment and progression

7a) Safety on transport.

7b) Balance re-ed for running.

7c) Running re-ed – return to Marathon training.

**Subjective and Objective Markers**

A subjective marker is a measure that the patient reports that relates to the patients symptoms this is usually something from the subjective assessment.

An example of a subjective marker is: VAS score of their pain

An Objective marker is a measure that you measure that relates to the patient’s symptoms, this is usually something from the objective assessment.

An example of an objective marker is: range of passive cervical extension

**Outcome measures**

**Example Clinical Impression for this Case Study**

Pain and reduced elbow, wrist and hand function due to lateral epicondylitis (inflammation of the CETO)

**Example problem list for this case study**

|  |  |  |  |
| --- | --- | --- | --- |
| **ICF** | **Problem List** |  |  |
| 1. **Pain** | PA: intermittent, sharp 4/10 - 6/10 CETO  PB: intermittent ache 2/10 - 4/10 wrist extensors TOP |  |  |
| 1. **Swelling** | Tendinosis CETO (tennis elbow) |  |  |
| 1. **Muscle** | Weak 4/5 wrist extensors - resisted and active |  |  |
|  | Reduced grip strength 4/5 |  |  |
| 1. **Activity** | Reduced grip duration to 10 minutes |  |  |
| 1. **Participation** | Unable to continue with badminton group |  |  |
|  | Unable to continue with decorating new home |  |  |

**Example SMART Goals for this case study**

|  |  |  |  |
| --- | --- | --- | --- |
| **ICF** | **Problem List** | **SMART Goal** |  |
| **1.Pain** | PA: intermittent, sharp 4/10 - 6/10 CETO  PB: intermittent ache 2/10 - 4/10 wrist extensors TOP | Pain reduced 50% in 4/52 and free in 8/52 |  |
| **2.Swelling** | Tendinosis CETO (tennis elbow) | No swelling or inflammation in 6/52 |  |
| **3.Muscle** | Weak 4/5 wrist extensors - resisted and active | 5/5 wrist extensors in 8/52 |  |
|  | Reduced grip strength 4/5 | 5/5 grip strength 8/52 |  |
| **4.Activity** | Reduced grip duration to 10 minutes | 5/5 grip strength 8/52 (able to complete 40mins driving) |  |
| **5.Participation** | Unable to continue with badminton group | Return to badminton once/week |  |
|  | Unable to continue with decorating new home | Resume home decorating without recurrence |  |

**Example Treatment Plan for this Case Study**

|  |  |  |  |
| --- | --- | --- | --- |
| **ICF** | **Problem List** | **SMART Goal** | **Treatment Plan** |
| **1.Pain** | PA: intermittent, sharp 4/10 - 6/10 CETO  PB: intermittent ache 2/10 - 4/10 wrist extensors TOP | Pain reduced 50% in 4/52 and free in 8/52 | 1a) Advice and education regarding diagnosis, prognosis and treatment plan  1b) Ensure informed consent prior to all interventions.  1c) POLICE  1d) Electrotherapy, IF/TENs |
| **2.Swelling** | Tendinosis CETO (tennis elbow) | No swelling or inflammation in 6/52 | 2a) 1c  2b) Specific soft tissue massage CETO  2c) Friction (if req)  2d) Electrotherapy US  2e) Wrist extensor / CETO stretches |
| **3.Muscle** | Weak 4/5 wrist extensors - resisted and active | 5/5 wrist extensors in 8/52 | 3a) Isometric wrist extensor strengthening  3b) Isotonic wrist extensor strengthening  3c) Eccentric Loading wrist extensors |
|  | Reduced grip strength 4/5 | 5/5 grip strength 8/52 | 3d) 3abc  3e) Grip strengthening exercises |
| **4.Activity** | Reduced grip duration to 10 minutes | 5/5 grip strength 8/52 (able to complete 40mins driving) | 4a) 1, 2,3.  4b) Endurance exercises grip and wrist extensors |
| **5.Participation** | Unable to continue with badminton group | Return to badminton once/week | 5a)1-4 |
|  | Unable to continue with decorating new home | Resume home decorating without recurrence | 5b) 1-4 |