Maitland Concept
- shoulder

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PT, MMT, FAAOMPT, CMDT,
Introductions

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• Manager Accelerated Rehabilitation Merrillville
• 1992 - Bachelor of Science in Physiotherapy – Curtin University, Perth, Western Australia.
• 1996 - Fellowship in Manual therapy (Masters in Manipulative Therapy) – chief instructor Bob Elvey.
• Certified in McKenzie method
• Adjunct professor UIC fellowship program.
Geoff Maitland (1924 – 2010)

• trained in Australia as a physiotherapist from 1946 to 1949
• In 1961 he received an award from a special studies fund to go overseas and study with other practitioners of musculoskeletal medicine.
Pioneer in Manual Therapy

• In 1964 “Vertebral Manipulation” published.
• 1970 “Peripheral Manipulation” was published.
• He was one of the cofounders, in 1974, of the International Federation of Orthopedic Manipulative Therapists (IFOMT) a branch of the World Confederation of Physiotherapy (WCPT).
The “concept”

• Only while teaching one of his first courses in continental Europe in the 70’s that he recognized, that in fact his work and ideas were a specific concept of thought and action rather than a method of applying manipulative techniques.
The concept

• Started with a focus on passive movement for musculoskeletal problems
• Has formed the basis for assessment and treatment in most Australian physiotherapy schools.
• Continued evolution of his concept and integration of current EBM and other specialist approaches now forms basis for specialist post graduate degrees (sports, manual therapy) in Australia currently.
Manipulative to manual to musculoskeletal therapy (Jull)

- 70s, 80s, and 90’s era of manual therapy cults
- 1986 publication of Grieve’s Modern Manual Therapy – incorporated other parameters of treatment
- 1990s to 2014 (and beyond) era of research and development of evidence based practice
- In Australia by 2000’s nearly all Australian educational programs and specialist designations – musculoskeletal vs manual therapy
Maitland is not “techniques”

• “the idea of solely learning techniques and applying them indiscriminately is totally inadequate” (Maitland, 1970).
Maitland is not manual therapy only.

• Integrates well with most systems due to it’s flexibility.
• Does not claim to be only way or best way to treat musculoskeletal presentations.
  – “Manipulation (passive movement) is not “the be all and end all” in overall management of patients with musculoskeletal disorders” (Geoff Maitland).

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What is manual therapy?

• “if after a comprehensive exam you feel that someone’s pain is due to an unstable spine – give them appropriate stability exercises – that is manual therapy” (paraphrased IFOMT 2000 – Bob Elvey)

• In response to the preponderence of research being done comparing manual therapy to stabilization exercises with out appropriately subgrouping
Current day interpretations

• Manual therapy is a tool in your tool box
• In the USA manual therapy fellowships are seen as high level specializations in musculoskeletal problems.
• However there are other systems and approaches with in PT outside of manual therapy that are also specialist programs in addressing musculoskeletal problems (e.g. McKenzie Fellowship, MDI fellowship)
• All have something in common – clinical reasoning
Why passive movement??

• Allows localization of movement – accessory, wind up techniques
• Allows movement of joint in ways patient cannot replicate (accessory)
  – Active movements may need accessory motion that cannot be achieved with physiological exercise.
• Often an active exercise moves everything around region you want movement except for joint you do want movement.
• Allows for control of dose easily.
• Can achieve movement easier in “fear of movement” patients.
Mechanisms of manual therapy

• Manipulative therapy better explained by neurophysiological mechanisms than biomechanics
• Can have temporary effect on muscle – both inhibitory and excitatory
• Can relieve pain
• BUT does not address the underlying neuromuscular problem (Jull).
The future

- Manual therapy alone inadequate to address all types of patients we see
- Need multiple tools in tool box
- BIOPSYCHSOCIAL APPROACH
• MAITLAND APPROACH
Key concepts of the approach

1. patient centered approach
2. a specific way of thinking
3. Emphasizes importance of assessment
4. A Specific system that guides therapist
5. Treatment derived from a thorough and specific assessment and on going clinical reasoning process.

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1. Patient centered approach

Key component is based around a **personal commitment to the patient.** (Maitland, G D, Peripheral Manipulation 4thEd, Butterworth-Heinemann)
Continual focus
Consider the patients perspective
Communication is vital

“Gee, talk about body language!”
2. Thinking

• FLEXIBLE
• OPEN MINDED
• NOT DOGMATIC
Emphasizes Metacognition – thinking about thinking

• "awareness or analysis of one's own learning or thinking processes." Merriam-Webster's Dictionary.
• Very important in high level clinical reasoning.
• Your ability to look at the way you are thinking.
• Important to be able to look beyond what you now believe.
• Should be done continuously
Question belief systems

- Encourages being able to critically appraise your own belief systems
- Why do you believe the approach you currently practice
- Does it fit with latest EBM
- Do you really know why you may get a positive result
- Maitland didn’t purport to know
- Can shut down your clinical reasoning if you think you know the answers
Emphasizes Lateral Thinking

- **lateral thinking** - a way of thinking which seeks the solution to intractable problems through unorthodox methods, or elements which would normally be ignored by logical thinking.
How do we facilitate this??

• Clinical reasoning forms – 1 way.

UNIVERSITY OF SOUTH AUSTRALIA
School of Health Sciences (Physiotherapy Discipline)
CLINICAL REASONING REFLECTION FORM

STUDENT……………………..DATE…………….PATIENT’S NAME………………………..

PERCEPTIONS / INTERPRETATIONS
ON COMPLETION OF THE SUBJECTIVE EXAMINATION

1. ACTIVITY & PARTICIPATION CAPABILITY/RESTRICTION
   Abilities ………………………………………………………………………………………………………
   Restrictions ………………………………………………………………………………………………..

2. PATHOLOGICAL MECHANISMS
   Identify the DOMINANT Pain Mechanism and supporting evidence:
   ………………………………………………………………………………………………………………….
   If Neurotrophic or Peripheral Neuropathic dominant, specify the stage of Tissue Healing:
   ………………………………………………………………………………………………………………….

3. PATTERN OF AGGRAVATION
   Indicate the dominant pattern of aggravation (e.g. flexion, extension, sustained positions, movement, load, stress, etc.):
   ………………………………………………………………………………………………………………….

4. SOURCE OF THE SYMPTOMS
   Identify the possible sources for each symptom:
   Symptom 1 ……………………………………………………………………………………………………….
   Symptom 2 ……………………………………………………………………………………………………….
   Symptom 3 ……………………………………………………………………………………………………….

5. CONTRIBUTING FACTORS
   List any potential contributing factors identified in the subjective examination:
   ………………………………………………………………………………………………………………….

6. DAY 1 PRIORITIES
   Specify your priorities for physical examination on Day 1: ……………………………………………

7. PRECAUTIONS & CONTRAINDICATIONS
   List any features suggesting caution or contra-indication to P/E or treatment: ………………………

8. YELLOW FLAGS
   Identify any Yellow Flags and how you plan to attend to them in your P/E and treatment: …………………..

9. EXPECTATIONS AND GOALS
   Specify the patient’s expectations/goals, whether you consider them realistic and how you may suggest breaking them down into short versus longer term goals:
   ………………………………………………………………………………………………………………….

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Maitland’s “PERMEABLE BRICK WALL” Mode of Thinking

<table>
<thead>
<tr>
<th>Biomedical Knowledge</th>
<th>Clinical Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Anatomy</td>
<td>History</td>
</tr>
<tr>
<td>– Physiology</td>
<td>Signs</td>
</tr>
<tr>
<td>– Pathology</td>
<td>Symptoms</td>
</tr>
<tr>
<td>– Biomechanics</td>
<td>The Patient</td>
</tr>
<tr>
<td>– Theories</td>
<td></td>
</tr>
<tr>
<td>• What is Known</td>
<td>What you HEAR, SEE &amp; FEEL</td>
</tr>
<tr>
<td>• What is Believed</td>
<td></td>
</tr>
<tr>
<td>• What may remain to be proven or is currently questioned</td>
<td>Clinical Reasoning</td>
</tr>
</tbody>
</table>

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Realize limitations of Medical diagnosis

- Respects medical diagnostics but realizes limitations
  - Does not give stage of pathology or irritability
    - Shoulder OA
    - Rotator cuff tear
  - May be irrelevant
    - Rotator cuff pathology
    - Labral pathology
Realize limitations of Special tests

• Respects all tests as part of assessment process but realizes
  – No one test perfect
  – Imaging has false positive (rotator cuff tears/ labral pathology that are irrelevant) and false negatives (lesions in tissues not visualized on MRI).
  – All tests/assessment information part of puzzle
  – Significance can vary from patient to patient
Theories May Play a Small Role

• Theories of biomechanics (proven/unproven and questioned)
  – seldom consider multiple tissues
  – Often lack in vivo studies
  – Lack RCTs
  – Questioned: Roll/Spin/Glide in Sh

Research theories (that are clinically unproven) may not apply

• If the theory fits the clinical presentation it may prove useful in the management of that patient
Shoulder specific examples

• Labral/rotator cuff pathology on imaging may be irrelevant
• May be relevant but can heal/settle down
• Convex – concave rule doesn’t seem to work well in shoulder – rather than rely on rule treat based on hypothesis
Hypothesis Testing

1. Basis for differential diagnosis.
2. Every question and test adds/subtracts/generates to a hypothesis.

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No one test is diagnostic.

While sensitivity and specificity important measures of how good an individual test is, it is still just one test.
What is positive?

1. Sensitivity and specificity do not give indication of magnitude of response to a test – important in integrating into hypothesis ...
   1. e.g. resisted rotator cuff – pain but can vary from ..minimal ..mod...significant
   2. Lumbar quadrant – pain immediately, 10 seconds, 30 seconds

2. How do we interpret??
Hypothesis Categories (Jones and Rivett)

1. Activity capability/restrictions (dysfunction).
2. Patient’s perspectives on their experience.
3. Pathobiological mechanisms.
4. Physical impairments and associated structure/tissue sources (source and site of the disorder).
5. Predisposing and contributing factors.
6. Precautions and contraindications.
8. Prognosis.
Lateral (horizontal) thinking
Processing information through hypothesis categories
Hypothesis Categories

- Capabilities & Restrictions
- Patients’ perspectives
- Source
- Mechanisms
- Contributing Factors
- Management
- Precautions & CI’s
- Prognosis

- Main Problem, Body Chart, SQ’s, Behavior, HPC, PMHx
- Obs, AROM, MMT, PPIVM’s, PAIVM’s, Special Tests etc.
Diagnosis the key

“Diagnosis is the most important factor in the prescribed management of all musculoskeletal disorders” (Hall and Elvey, 1999).
IF DIAGNOSIS IS THE KEY - HOW DO YOU GET THERE?

1. Get the pieces out of the box (ASSESSMENT)
2. Fit them together (CLINICAL REASONING – hypothesis testing and differential diagnosis)
3. See the picture (DIAGNOSIS)
4. Choose the best tool to treat.
   - Clinical reasoning is the interim phase between assessment and diagnosis BUT is occurring continuously during assessment.
   - Without as many pieces as possible there is an increased likelihood of getting it wrong.

• Maitland emphasized continual assessment
  – At the Initial examination
  – After the Initial Examination
  – During the performance of a technique
  – After the application of a technique
  – At the end of the Rx session
  – At the beginning of the next Rx session
  – Retrospectively
  – Continuously
Assessment – thorough, specific.

• Must be thorough (do not cut corners)
• Specific –
  – When palpating
    • R1/R2/pain,
    • is that your pain
  – When asking questions –
    • Agg – Sit - how long does it take to hurt when you sit..then what happens...does it continue to get worse...does it plateau and if so how long..or do you have to get up..if so how long...how long does it take to settle back to baseline level when you do change positions.
Assessment

• Is more than just asking a list of questions.
• Is a skill in itself.
• Involves picking up on subtle non-verbal cues.
• Involves asking same question in different ways.
• Involves knowing when to lead versus have open questions.
• Drives clinical reasoning.
Maitland Assessment...
SUPER CLUSTERING

• Maitland involves true clinical EBM
  – 3 Equally Weighted Factors
    • 1) Patient Perspective and Values
    • 2) Clinical Expertise and Reasoning
    • 3) Best Available Evidence

Involves continuous Clinical Reasoning

Effectively = SUPER CLUSTERING
4. Need a Specific system that guides therapist

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Key components of assessment and clinical reasoning

• Irritability
• Comparable sign
• Differential diagnosis
• Relationship of pain and resistance
Irritability

• How much activity,
• Causes how much symptom provocation, (pain/spasm/weakness)
• And how long does it take to settle back to baseline?
Irritability

• Extremely important concept in Maitland approach
• Determined from subjective
• Helps plan how vigorous you can be in physical assessment
• Helps with selection of treatment
• If Irritable, what is the underlying pathology?
  – Mechanical vs Inflammatory vs Sinister Pathology
The Irritable Disorder

• Characterized by
  – Constant P/ OR Severe Intermittent P
  – Easily provoked
  – Long time to settle

• Examples include:
  – Acute RA
  – Severe trauma
  – Inflamed chemical pain
The Comparable Sign – the holy grail

• Comparable Sign
  – “A comparable joint or neural sign refers to a combination of pain, stiffness and/or spasm which the examiner finds on examination and considers to be comparable with the patients symptoms.”
  Maitland, 1991
What makes a sign comparable?

- It must reproduce the persons symptoms, or produce abnormal pain when unable to reproduce their symptoms.
The MOST comparable sign

• You are likely to find many signs in every patient. However, many will not be relevant to their current complaint.

• Your evaluation should focus on finding the most comparable sign:
  – The worst combination of abnormal movement of an appropriate structure, that comes closest to producing the persons symptoms.
Finding the holy grail

Ideally the comparable sign would like to be found in all aspects of physical assessment

• Active movement
• Passive movement
  – Physiological
  – Accessory
Shoulder specific

• Shoulder complex joint
• Often not as simple as finding comparable sign and doing MT technique
• But MT may be useful part of intervention
• Maitland would not expect MT to be only intervention – all in the clinical reasoning
Not always easy

• We would especially like to find it in active motion, as this is functional to patient and allows for easy with in session reassessment.
• Not always the case.
• May need to wait for between session changes OR
• differences in side to side ROM or strength may drive hypothesis
• Or may need to look at a more motor control/regional interdependence type model.
Increasing stress

• If basic movements do not reproduce the comparable sign or something close a graduation of forces is used to attempt to elicit
  – Overpressure
  – Repeated
  – Sustained
  – Combined
  – Combined sustained/repeated
Differential diagnosis

• Addition of tests/questions to add/subtract to hypothesis or generate new ones
Pain and resistance

• The relationship of pain and resistance is a core concept in the Maitland system.
• Resistance can mean stiffness/tightness or looseness/instability
• Drives treatment selection
• Determined from COMPLETE assessment.
R1 and R2

- R1 = Onset of resistance
- R2 = Limit of resistance
- Very important in passive examination
R1

- R1 is defined as the first perceptible onset of resistance
- It is NOT an anatomical concept
- Anatomically it will vary from area to area
- Varies in its use from joint to joint
- Used to
  - Improve the sensitivity of palpation of therapists
  - To slow you down and make you more gentle
  - To help determine grades of treatment
  - Picks up stiffness component when pain doesn’t allow R2
  - Useful in finding subtle laxity/instability (especially in peripheral joints)

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• Is the limit of resistance
• Often if pain is involved not found as too painful
• However if no pain if true R2 is not achieved you cannot say you completely examined joint (may be very important in hard to find comparable sign patient).
TREATMENT OF PAIN AND RESISTANCE

• PAIN
  – Reduce, centralize, and eliminate the pain (gentle movement)

• STIFFNESS
  – Produce the pain of the stiff dominant disorder, respect the pain, to move pain further out in range and use it to increase range (reduce stiffness) (more vigorous movements)

• INSTABILITY
  – use neuromuscular strategies, taping, bracing to stabilize segment. Passive movement techniques may still be appropriate depending on stage and irritability.
Often a mixed picture

• As often there is a mixture of pain and stiffness, the vigor of movement techniques may need to be adjusted dependent on the patient.

• Maitland uses a grading system that allows the clinician to accurately and quickly describe how far into pain and resistance the technique is applied.

• The grades of movement is determined by your intent based on your assessment/diagnosis.
Movement Diagrams

• Movement diagrams are a teaching tool to make therapists think more about this relationship between resistance and pain
• Usually students are required to draw one to explain what they feel in a specific joint.
• Not used in normal practice or notes.
grades

The number refers to amplitude
I – before resistance small amplitude
II – before resistance large amplitude
III – with in resistance large amplitude
IV – with in resistance small amplitude

Pluses (+) & Minuses (-) are used to allow further refinement of the previous grades with regards where in the ROM they are.
Grades

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5. Treatment

• Derived from assessment and clinical reasoning process.

• Does not always have to be a passive movement technique if dominant hypothesis suggests a better treatment strategy.

• However passive movements can be a useful option even in problems that may have other more dominant mechanisms explaining the reason for the problem.
Vigor of treatment

- Maitland a strong advocate of gentle passive movement.
- Uses a complete clinical reasoning process to select this.
- In general recommends using the most gentle treatment needed to achieve success.
- Felt manipulation only needed in minority of cases, usually after mobilization has failed.
- Recognized that manipulation an all or nothing technique where as mobilization can be controlled much more and therefore safer.
Subjective

• At end of subjective should have an idea re
  – Stage
  – Irritability
  – Possible tissues involved
  – Dominant pain mechanism
  – Areas you want to assess to test hypothesis
  – Possible treatment
During physical

• Confirming, changing hypothesis with every test.
• Possibly generating treatment ideas if movements produce/alleviate
• Zoning in on main problem to generate a specific treatment
After physical

• Confirmation of irritability
• Hopefully have found an active movement that produces comparable sign
• May have felt resistance abnormalities at certain joints (in passive physiological and accessory)
• Need to tie this into why have pain – integrate with hypothesis
• May have produced comparable sign with accessory allowing specific joint localization and treatment options
Intent of the Examination and Treatment

• Treat actively or passively?
• Expect a cure or accommodation?
• Treating pain, stiffness, weakness, instability or in coordination?
• Open (stretch) or close the area of disorder?
• Intend to reduce or produce?
• When to treat the cause of the disorder [precipitating factor] and predisposing factors?
Treatment – simplistically

• should be able to generate multiple passive movement options dependent on your assessment.
• Usually can pick a physiological, accessory or possibly active motion technique.
• Often treatment is not the most important thing in helping patient – management may be more important (e.g. altering activities, ergonomics, abnormal pain behavior)
• This is part of the Maitland method, but from treatment perspective – passive movement emphasized.
Which passive movement technique?

• Consider
  – How specific – accessories can often move joints/tissues that will not be affected with a physiological motion (think of spine...all joints moving except the stiff one)..
  – Cannot replicate glides with anything but accessory technique.
    • Need normal accessory motion for physiologic motion.
  – What is underlying pathology...will accessory or physiologic affect more (e.g. adhesive capsulitis vs OA shoulder).
  – Physiologic motion is what ultimately is wanted, and may be a first choice if you feel you can get movement where you want it.
  – Usually in subsequent sessions, if starting with accessory you will be incorporating a physiologic technique and/or adjuncive exercise.
Which direction?

- Into/out of pain/resistance
- Open/close
- Aggravating/easing
- Consider
  - Irritability
  - Stage
  - What possible tissues involved
e.g. stiff knee joint into F vs painful knee into F
different grades?
different direction?
accessory?
What Dose?

- What grade?
- How much?
- How often?

- Consider
  - Irritability
  - Stage
  - What possible tissues involved
General Principles

• “Treatment techniques grow out of the subjective and physical examination.”

• Think of stretching stiff tissue with the intent of producing the pain of a stiff-dominant disorder thus increasing range.
  – Use Grade III and IV of the most restricted movement.
  – Respect the patient’s pain.
  – Move resistance up in range.
  – Increase pain, but do not make it worse.

• Think of only gently moving painful tissue with the intent of reducing and eliminating the pain of a pain-dominant disorder.
  – Use Grades I and II of the freest movement.
  – Range is not important.
General Principles

• Use an opening technique to stretch a tissue or a closing technique to compress a tissue.

• Keep it simple! For most patients, basic techniques are done in neutral or at end range (L) are sufficient.

• Combined techniques and manipulation are needed in very few patients.
Treating using Passive movement

• Generates treatments based on assessment and in particular
  – Irritability
  – Stage of disorder
  – Reproduction of comparable sign in AROM/PROM
  – Re assessment of this AROM comparable sign post treatment
  – Concepts of pain – resistance and where patient lies in this continuum.
Summary

• Maitland a pioneer in use of passive movement.
• Refined pre-existing concepts and added his own.
• His mode of thinking probably most important part of the concept.
• Emphasizes assessment and continuous hypothesis testing.
• Emphasizes reassessment of comparable sign to help guide clinician
Use the best tool

• Passive movement only one option in treatment
• Not always the best
• At other times may be first choice
Shoulder specifically

• Common pathologies
  – Rotator cuff tendons
  – Labrum
  – Capsule
  – Impingement
  – a/c joint injury
Rotator cuff

- Could be overt injury due to event
- Could be chronic due to overuse
- Could be due to impingement
- Realize imaging may be irrelevant
- Do we need to just treat tendon (acute type injury, tendinosis) vs treat reason tendon getting irritated (alter load, imbalances – motor control, stiffness/tightness)

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labrum

- Is imaging relevant – can we specifically know is labrum
- Consider work of Salter on CPM
- Is it acute vs chronic
- Do we need to treat reason labrum getting irritated (alter load, imbalances – motor control, stiffness/tightness)
Capsule

• Can be component in a lot of shoulder problems (impingement) or problem itself – adhesive capsulitis
• Freezing/frozen/thawing – there is no thawing
• Consider dose
Impingement

- Tightness
- Looseness
- Motor control
- Structural
- Differential diagnosis – muscle tests in neutral vs impingement position
- Decompress subacromial space with comp sign