International Federation of Orthopaedic Manipulative Physical Therapists

SUBGROUP OF WCPT World Confederation for Physical Therapy

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International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) International Framework for Examination of the Cervical Spine Region prior to Orthopaedic Manual Therapy (OMT) Intervention

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Background

This consensus document presents a clinical reasoning framework for good practice developed by an international collaboration of the Standards Committee of IFOMPT and international subject clinical experts. This framework was informed by the consensus forum at the IFOMPT International Conference in Rotterdam (June 2008) where nominated experts from each Member Organisation (MO) of IFOMPT were invited to participate. Prior to this forum, the issues central to this document were explored through oral presentations and discussion at the WCPT International Conference (June 2007, Vancouver) and in Rotterdam. Drafts of the document have been developed since 2008 through an iterative consultative process with experts and MOs. This document has been developed as a resource to educate members of the MOs of IFOMPT, physical therapists internationally, and through physical therapists, the public. The framework has subsequently been accepted (October 2012, Quebec or earlier if possible) by all MOs of IFOMPT.

IFOMPT

The vision statement of IFOMPT is:

> *"World-wide promotion of excellence and unity in clinical and academic standards for manual/musculoskeletal physiotherapists."*

The vision statement summarises the mission of IFOMPT that as an organisation it aims to:

1. Promote and maintain the high standards of specialist education and clinical practice in manual/musculoskeletal physiotherapists.
2. Promote and facilitate evidence based practice and research amongst its members.
3. Communicate widely the purpose and level of the specialisation of manual/musculoskeletal physiotherapists amongst physiotherapists, other healthcare disciplines and the general public.
4. Work towards international unity/conformity of educational standards of practice amongst manual/musculoskeletal physiotherapists.
5. Communicate and collaborate effectively with individuals within the organisation and with other organisations.

The Standards Committee of IFOMPT is a sub-committee of the Executive Committee and responsible for advising the Executive on educational issues and maintaining standards. The Standards Document is

the guideline document which IFOMPT provides for groups of Manual Therapists who wish to seek membership of IFOMPT through the creation of postgraduate educational programmes in OMT. Part A of the Standards Document (2008) details the educational standards.

Executive summary

(To complete post first review by MOs and prior to their final review)

To include:

- Bullet point list of key principles
- Flowchart of clinical reasoning

Aim of the framework

The framework is designed to give guidance for the assessment of the cervical spine region for patients in advance of planned OMT interventions. The IFOMPT definition of Orthopaedic Manual Therapy (OMT), voted in at the General Meeting in Cape Town, March 2004 is:

> *Orthopaedic Manual Therapy is a specialised area of physiotherapy / physical therapy for the management of neuro-musculo-skeletal conditions, based on clinical reasoning, using highly specific treatment approaches including manual techniques and therapeutic exercises.*
>
> *Orthopaedic Manual Therapy also encompasses, and is driven by, the available scientific and clinical evidence and the biopsychosocial framework of each individual patient.*

OMT interventions for the cervical spine addressed through this framework include: manipulation, mobilisation and exercise.

The framework is based on best available evidence at the time of writing and is designed to be used in conjunction with the IFOMPT Standards (2008) available at www.ifompt.org that define postgraduate practice in OMT internationally. The standards define postgraduate practice in key areas and include clinical reasoning and evidence based practice, which are both central to this framework.

Within the cervical spine, events and presentations of cervical artery dysfunction are rare, but an important consideration as part of an OMT assessment. Arterial dissection (and other) presentations are fairly recognisable if the appropriate questions are asked as part of the patient history, if interpretation of data enables recognition of this potential, and if the physical examination can be adapted to explore any potential vasculogenic hypothesis further. The framework is therefore reflective of best practice and aims to place risk in an appropriate context that is informed by the evidence. The framework aims to identify risk prior to overt symptoms being present in a patient presenting for cervical management, and in this context, risks of both ischaemic and non-ischaemic adverse responses are important considerations.

An important underlying principle of the framework is that physical therapists cannot rely on the results of only one test to draw conclusions, and therefore development of an understanding of the patient's presentation following an informed, planned and individualised assessment is essential. There are multiple sources of information available from the process of patient assessment to help us become more confident in estimating the probability of cervical artery dysfunction.

The framework is intended to be informative and not prescriptive, and aims to enhance the physical therapist's clinical reasoning as part of the process of patient assessment and treatment. The framework is intended as simple and flexible in its ability to be applied to an individual patient to facilitate patient centred practice.

The framework is divided into the following sections, and is designed to be used in conjunction with key literature sources identified in the context section:

1. Context to assessment of the cervical region
2. Clinical reasoning as a framework
3. Patient history
4. Planning the physical examination
5. Physical examination
6. Risk v benefit analysis
7. Flowchart of clinical reasoning
8. Informed consent and medico-legal framework
9. Safe OMT practice, including emergency management of an adverse situation
10. Teaching OMT for the cervical region
11. Response to the media
12. References

    Appendix: IFOMPT Brochure

Section 1: Context to assessment of the cervical region

1.1 IFOMPT

The vision of IFOMPT is for **worldwide promotion of excellence and unity in clinical and academic standards for manual/musculoskeletal physiotherapists**, with its mission statement including to **work towards international unity/conformity of educational standards of practice amongst manual/musculoskeletal physiotherapists**. The process of development of this framework has been guided by this vision and mission, commencing with an exploration of the key issues in 2007.

1.2 Process of development

At the World Confederation for Physical Therapy Conference in Vancouver (2007) IFOMPT coordinated a session of speakers and discussion titled 'VBI [vertebro-basilar insufficiency] session' to address a topic that generates frequent questions from MOs of IFOMPT and individual physical therapists. The session involved much discussion about pre-manipulative screening in the cervical spine, and as a result of the session, the IFOMPT Standards Committee was asked to take the key issues forward. At the request of the Standards Committee, a survey using a questionnaire regarding pre-manipulative screening was carried out (DR/LC). The questionnaire was sent to all MOs and Registered Interest Groups of IFOMPT in late 2007. Results of the survey were presented at the IFOMPT Conference in Rotterdam in 2008. In addition, a discussion forum was facilitated in Rotterdam (AR) and contributed to by the development team (DR/LC/TF/WH/RK), involving a nominated expert from each MO. The forum concluded that the development of an agreed international framework was required to inform OMT practice in this area.

1.3 Key findings from the 2007 survey

Twenty MOs (100%) and 2 Registered Interest Groups responded. MO membership varied between countries with 7 small (<100), 8 moderate (101-399), and 5 large (>400). Seven MOs (35%) had their own guidelines or protocol, and 10 MOs (50%) and 1 Registered Interest Group essentially used that of another country (Australia 9 and UK 1). The majority of MOs (85%) used pre-manipulative guidelines, with the Australian guidelines commonly adopted internationally. Only 5 (25%) MOs had a patient information sheet about cervical manipulation and its risks. Eight MOs (40%) and 1 Registered Interest Group recommend warning patients about the small risk of stroke and death; and 3 MOs recommend informing re stroke only. Only 3 MOs were aware of cases of stroke attributed to a manipulative physical therapist in their country, and provision of information re serious adverse responses was not standard practice in all countries.

For the physical examination of patients, 17 MOs (85%) and 2 Registered Interest Groups taught screening positional tests involving extension and rotation (2 not extension), and all 20 MOs (100%) and 2 Registered Interest Groups recommend the use of the sustained pre-manipulative position as a screening test. Fifteen MOs and 1 Registered Interest Group taught other pre-manipulative screening tests, including: craniovertebral ligament tests (8, 40%), differentiation tests (2), and Hautant's test (2).

In exploring the use of manipulation in the cervical spine, 8 MOs (40%) and 1 Registered Interest Group reported that members have decreased the use of manipulation in the upper cervical spine in the last 10 years. Nineteen MOs (95%) and 1 Registered Interest Group continue to teach upper cervical manipulations, with 3 MOs teaching upper cervical spine manipulations involving end-range rotation.

Thirteen MOs (65%) and 1 Registered Interest Group indicated that the manipulation techniques taught have been changed to limit the amount of rotation used for upper cervical techniques.

1.4 Key points to emerge from the discussion forum in Rotterdam 2008

The forum in Rotterdam agreed that an international framework was required, and agreed the following points and guiding principles to inform a first draft of a consensus document:

1.4.1 Existing documents need to inform development of an international framework. Particularly;

- Clinical Guidelines for Assessing Vertebrobasilar Insufficiency in the Management of Cervical Spine Disorders (Rivett et al, 2006)
- Manipulation Association of Chartered Physiotherapists, Cervical Arterial Dysfunction and Manipulative Physiotherapy: information document (Kerry et al, 2007).

1.4.2 Inclusion of key aspects of the framework as detailed on page 2.

1.4.3 Consideration be given to including the pre-manipulative positional test.

1.4.4 Consideration be given to including information on craniovertebral ligament testing.

1.4.5 Recommendations on informed consent need to be sufficiently flexible for different jurisdictions (inclusive of all MOs).

1.4.6 Preferred options to be included on manipulative practices.

1.4.7 An IFOMPT endorsed document must be:

- reflective of best practice and research
- flexible and simple in application
- legally suitable to individual countries
- an aid to patient-centred clinical reasoning
- informative but NOT prescriptive to guide practice.

Section 2: Clinical reasoning as a framework

Clinical reasoning is employed as the framework for this document. The cognitive and metacognitive processes of reasoning, using evidence informed knowledge within OMT are the central components to expertise of practice in OMT (Rushton and Lindsay, 2010).

2.1 IFOMPT Standards

The IFOMPT Standards Document (2008) states that:

> *"Advanced clinical reasoning skills are central to the practice of OMT Physical Therapists, ultimately leading to decisions formulated to provide the best patient care. Clinical decisions are established following consideration of the patient's clinical and physical circumstances to establish a clinical physical diagnosis and treatment options. The decisions are informed by research evidence concerning the efficacy, risks, effectiveness, and efficiency of the options (Haynes, 2002). Given the likely consequences associated with each option, decisions are made using a model that views the patient's role within decision making as central to practice (Higgs and Jones, 2000), thus describing a patient centred model of practice".*
>
> *"The application of OMT is based on a comprehensive assessment of the patient's NMS system and of the patient's functional abilities. This examination serves to define the presenting dysfunction(s) in the articular, muscular, nervous and other relevant systems; and how these relate to any disability or functional limitation as described by the WHO's International Classification of Functioning, Disability and Health (WHO, 2001). Equally, the examination aims to distinguish those conditions that are indications or contraindications to OMT Physical Therapy and / or demand special precautions, as well as those where anatomical anomalies or pathological processes limit or direct the use of OMT procedures".*

2.2 IFOMPT competencies relating to clinical reasoning

Dimension 6 of the detailed competencies relates to clinical reasoning in postgraduate physical therapy practice in OMT, as follows:

Dimension 6	**Demonstration of critical and an advanced level of clinical reasoning skills enabling effective assessment and management of patients with NMS dysfunctions**
Competencies Relating to Knowledge	
Competency D6.K1	Demonstrate critical understanding of the process of hypothetico-deductive clinical reasoning, including hypothesis generation and testing
Competency D6.K2	Demonstrate effective use of the process of pattern recognition, including the importance of organising clinical knowledge in patterns
Competency D6.K3	Demonstrate critical application of the various categories of hypotheses used in OMT, including those related to diagnosis, treatment and prognosis

Competency D6.K4	Demonstrate effective recognition of dysfunction requiring further investigation and / or referral to another healthcare professional
Competency D6.K5	Demonstrate critical evaluation of common clinical reasoning errors
Competencies Relating to Skills	
Competency D6.S1	Demonstrate accurate and efficient selection of inquiry strategies based on early recognition and correct interpretation of relevant clinical cues
Competency D6.S2	Demonstrate critical and evaluative collection of clinical data to ensure reliability and validity of data
Competency D6.S3	Demonstrate advanced use of clinical reasoning to integrate scientific evidence, clinical data, the patient's perceptions and goals, and factors related to the clinical context and the patient's individual circumstances
Competency D6.S4	Demonstrate integration of evidence based practice and experiential reflective practice in clinical decision making
Competency D6.S5	Demonstrate application of collaborative clinical reasoning with the patient, carers / care-givers and other health professionals in determining management goals, interventions and measurable outcomes
Competency D6.S6	Demonstrate effective prioritisation in the examination and management of patients with NMS dysfunction
Competency D6.S7	Demonstrate effective use of metacognition in the monitoring and development of clinical reasoning skills
Competencies Relating to Attributes	
Competency D6.A1	Demonstrate patient-centred clinical reasoning in all aspects of clinical practice
Competency D6.A2	Demonstrate critical understanding of the key role of clinical reasoning skills in the development of clinical expertise
Competency D6.A3	Demonstrate effective collaborative and communication skills in requesting further investigation or referral to another healthcare professional
Competency D6.A4	Demonstrate learning through critical reflection during and after the clinical encounter
Competency D6.A5	Demonstrate learning through precise and timely reassessment

2.3 Implications for practice

The framework requires effectiveness in the above clinical reasoning competencies to enable effective assessment and management of a patient, and thus effective and efficient examination of the cervical region. It is clear that adverse events following the application of cervical manipulation could have been avoided if better clinical reasoning had been exercised by the clinician (Rivett 2004). The framework is therefore an aid to patient centred clinical reasoning.

Section 3: Patient history

3.1 Clinical reasoning processes

In line with the emphasis on clinical reasoning, it is essential that the patient history is used to establish and test hypotheses related to potential adverse events of OMT. It is important to realise that there are very limited diagnostic utility data related to many factors considered here. Therefore, the physical therapist's aim during the patient history is to make the *best* judgment on the probability of serious pathology and contraindications to treatment based on available information.

Many red flags which contraindicate or limit OMT treatment manifest in an obvious way in the patient presentation (Moore et al 2005), such as:

Contraindications to OMT interventions:

- Multi-level nerve root pathology
- Worsening neurological function
- Unremitting, severe, non-mechanical pain
- Upper motor neuron lesions
- Spinal cord damage.

Precautions to OMT interventions:

- Local infection
- Inflammatory disease
- Active cancer
- History of cancer
- Long-term steroid use
- Osteoporosis
- Systemically unwell
- Hypermobility syndromes
- Connective tissue disease.

However, there are serious conditions which may mimic musculoskeletal dysfunction in the early stages of their pathological progression:

- Cervical arterial dysfunction (e.g. vertebrobasilar insufficiency due to dissection) (Kerry et al, 2008)
- Upper cervical instability (Niere and Torney, 2004).

A patient experiencing for example pain from one of these presentations may seek OMT for the relief of the pain (Murphy, 2010; Taylor and Kerry, 2010). It is therefore important that the subtle signs of these pathologies are recognised in the patient history. It is also important to recognise risk factors indicating a potential for neuro-vascular pathology. Information is given below to highlight the key components of the patient history in this context.

3.2 Risk factors

Cervical arterial dysfunction

The following risk factors are associated with an increased risk of either internal carotid or vertebrobasilar arterial pathology and should be assessed as much as possible during the patient history (Arnold and Bousser, 2005; Kerry et al, 2008):

- Past history of trauma to cervical spine / cervical vessels
- History of migraine-type headache
- Hypertension
- Hypercholesterolemia / hyperlipidemia
- Cardiac disease, vascular disease, previous cerebrovascular accident or transient ischaemic attack
- Diabetes mellitus
- Blood clotting disorders / alterations in blood properties (e.g. hyperhomocysteinemia)
- Anticoagulant therapy
- Oral contraceptives
- Long-term use of steroids
- History of smoking
- Infection
- Immediately post partum

Upper cervical instability

The following risk factors are associated with the potential for bony or ligamentous compromise of the upper cervical spine (Cook et al 2005):

- History of trauma (e.g. whiplash, rugby neck injury)
- Congenital collagenous compromise (e.g. syndromes: Down's, Ehlers-Danlos, Grisel, Morquio)
- Inflammatory arthritides (e.g. rheumatoid arthritis, ankylosing spondylitis)
- Recent neck/head/dental surgery.

3.3 Importance of observation throughout history

Signs and symptoms of serious pathology and contraindications / precautions to treatment may manifest during the patient history stage of assessment. This is an opportunity to observe and recognise possible red flag indicators such as gait disturbances, subtle signs of disequilibrium, upper motor neuron signs, cranial nerve dysfunction, and behaviour suggestive of upper cervical instability (e.g. anxiety, supporting head/neck) early in the clinical encounter.

3.4 Differentiation

The following information is provided to assist in the differential diagnosis of musculoskeletal dysfunction from serious pathologies which commonly manifest as musculoskeletal dysfunction (Arnold and Bousser, 2005; Arnold et al, 2006; Kerry et al, 2008; Kerry, 2010):

	Internal carotid artery disease	**Vertebrobasilar artery disease**	**Upper cervical instability**
Early presentation	Mid-upper cervical pain, pain around ear and jaw (carotidynia), head pain (fronto-temporo-parietal) Ptosis; Lower cranial nerve dysfunction (VIII-XII)	Mid-upper cervical pain, occipital headache	Neck and head pain, feeling of instability; Cervical muscle hyperactivity; Constant support needed for head; Worsening symptoms
Late presentation	Transient retinal dysfunction (scintillating scotoma, amaurosis fugax); Transient ischaemic attack; Cerebrovascular accident	Hindbrain transient ischaemic attack (dizziness, diplopia, dysarthria, dysphagia, drop attacks, nausea, nystagmus, facial numbness, ataxia, vomiting, hoarseness, loss of short term memory, vagueness, hypotonia/limb weakness [arm or leg], anhidrosis [lack of facial sweating], hearing disturbances, malaise, perioral dysthaesia, photophobia, papillary changes, clumsiness and agitation); Cranial nerve dysfunction; Hindbrain stroke (e.g. Wallenberg's syndrome, locked-in syndrome)	Bilateral foot and hand dysthaesia; Feeling of lump in throat; Metallic taste in mouth

It is important to consider the above information in the context of the aforementioned risk factors.

3.5 Typical case histories of vascular dysfunction

3.5.1 Common vertebral artery dissection

Case: A 46 year-old female supermarket worker presented to physiotherapy with left-sided head (occipital) and neck pain described as “unusual”. She reported a 6 day history of the symptoms following a road traffic accident. The symptoms were progressively worsening. The pain was eased by rest and paracetamol. She reported a history of previous road traffic accidents. Past medical history included hypertension, high cholesterol, and a maternal family history of heart disease and stroke. Cranial nerve tests for VIII, IX, and X were positive and resting blood pressure was 170/110. Two days after assessment, the patient reported an onset of new symptoms including “feels like might be sick”, “throaty” and “feels faint” – especially after performing prescribed exercises. Two days after this, she reported a stronger feeling of nausea, loss of balance, swallowing difficulties, speech difficulties and acute loss of memory. Magnetic resonance arteriography revealed an acute hindbrain stroke related to a left vertebral (extra-cranial) artery dissection.

Synopsis: A typical background of risk factors and trauma, together with a classic pain distribution for vertebral arterial somatic pain which was worsening. Positive signs (blood pressure and cranial nerve dysfunction) were suggestive of cervical vascular pathology. Signs of hindbrain ischaemia developed in a typical time period post-trauma.

3.5.2 Vertebral artery with pain and the only clinical feature

Case: A physiotherapist presents to a fellow physiotherapist with a sore neck and unremitting headache. The individual complains that they “think” their “neck is out”. They ask if they can have their neck manipulated to “put it back in”. The headache has been present for 3-4 days and is getting worse. They note that the pain has been unrelieved by medication (paracetamol) and it appears to be of a mechanical presentation. Without taking a full history and carrying out a physical examination, the colleague goes ahead and manipulates the neck. The result was the individual experiencing numbness and paralysis to their left arm and hand.

Synopsis: Investigation post incident identified an intimal tear of the vertebral artery. The key issue in this case is that the presentation was not fully assessed through a detailed history and physical examination. The warning feature from the history of worsening pain, unrelieved by medication, combined with an inadequate physical examination and limited clinical reasoning, all contributed to an unfortunate and probably avoidable outcome.

3.5.3 Internal carotid artery example

Case: A 42 year-old accountant presents to physiotherapy with a 5 day history of unilateral neck and jaw pain, as well as temporal headache, following a rear-end shunt. There is a movement restriction of the neck and the physiotherapist begins to treat with gentle passive joint mobilisations, and advises range of movement exercises. The following day, the patient’s pain is worse, and he has developed an ipsilateral ptosis. The patient’s blood pressure is unusually high.

Synopsis: On medical investigation, an extra-cranial dissection of the internal carotid artery was found. The patient had underlying risk factors for arterial disease, and the presentation was typical of internal

carotid artery dissection, with a key differentiator being the ptosis. A dramatic systemic blood pressure response was a result of this vascular insult.

3.5.4 Further examples of similar cases can be found in the literature (Arnold and Bousser, 2005; Asavasopon et al, 2005; Arnold et al, 2006; Biousse et al, 1994; Caplan and Biousse, 2004; Chan et al, 2001; Crum et al, 2000; Debette and Lays, 2009; Kerry and Taylor, 2009; Lemesle et al, 1998; Rogalewski and Evers, 2005; Taylor and Kerry, 2005; Thanvi et al, 2005; Zetterling et al, 2000).

Section 4: Planning the physical examination

4.1 Necessity for planning

A process of interpreting the data from the patient history and defining the main hypotheses is essential to an effective physical examination (Maitland et al, 2005; Petty, 2005). Hypothesis generation from the history and refining, re-ranking and rejecting of these hypotheses in the physical examination is necessary to facilitate optimal clinical reasoning in OMT (Jones and Rivett, 2004). Therefore careful planning of the physical examination is required. In particular for this framework, the possible vasculogenic (cervical arterial) contribution to the patient's presentation needs to be clearly evaluated from the patient history data.

4.2 Are any further patient history data required?

An important component of planning is the identification of any further patient history data that may be required. That is, are there any gaps in the information obtained? Is the quality of the information obtained sufficient?

4.3 Decision making regarding the physical examination

Based upon the evaluation and interpretation of the data from the patient history, the physical therapist needs to decide:

- Are there any precautions to OMT?
- Are there any contraindications to OMT?
- What physical tests need to be included in the physical examination?
- What is the priority for these physical tests? This is to inform decisions regarding the order of testing and to determine which tests should be completed at the first visit.

Section 5: Physical examination

5.1 Blood pressure (BP)

Hypertension is considered a risk factor for carotid and vertebral artery disease. More acutely, an increase in BP may be related to acute arterial trauma, including of the internal carotid and vertebral arteries (Arnold and Bousser, 2006). Evaluation of BP as part of the physical examination may therefore be a valuable test to inform clinical reasoning.

Resting BP should be taken in either sitting or lying, with the arm (brachial pulse site) being at the same level (in relation to gravity) as the heart/4th intercostal space. A validated monitoring unit should be used ensuring the correct cuff-size. The cuff should be fitted so that two adult fingers can be inserted at the top and bottom when deflated. The patient should remain static in a calm environment for at least five minutes prior to testing. Repeat measurements can be taken leaving two minutes between each measurement.

Normotensive range (non-diabetic adult) is systolic 120-140mmHg/70-90mmHg diastolic (Mancia et al, 2007).

Although hypertension is an undoubted strong predictor of cardiovascular disease, interpretation of readings must be in the context of other findings, and sound clinical reasoning. Vascular disease is an interplay between various factors, of which high BP is just one (albeit a consistently important one). BP is a graduated, continuous measure and as such cannot have a threshold. The physical therapist should keep these points in mind during clinical decision-making. It is therefore unreasonable to state that all patients with hypertension and neck pain should be referred to a medical specialist. Hypertension and neck pain are only two of the many factors which influence the decision on probability of vascular pathology. Data regarding scaled risk is equally as clinically useful. There is a positive correlation between increased systolic and diastolic pressure and risk of stroke, that is the higher the pressure, the greater the risk. This would mean that a patient with say 190mmHg/100mmHg is at greater risk than a patient with 160mmHg/95mmHg. Thus, the risk is different even though they are both hypertensive. However, to reiterate, the actual utility of these data in isolation is limited as the true clinical risk is dependent on additional co-existing factors (Nash, 2007).

5.2 Craniovertebral ligament testing

There are a variety of ligaments that act together to maintain stability, and yet allow flexibility of the cervical region. These include the anterior and posterior longitudinal, interspinous, intertransverse, tectorial membrane, alar, transverse and ligamentum flavum ligaments (Panjabi and White, 1990). Instability of these ligaments could compromise vascular and neurological structures in the cervical region, thus would be a contraindication to the use of manipulation techniques (Gibbons and Tehan, 2006). Symptoms and signs of instability include (Gibbons and Tehan, 2005):

1. Facial paraesthesia secondary to dysfunction of the connections of the hypoglossal nerve, as well as the ventral ramus (neck-tongue paraesthesia) and the dorsal ramus (facial numbeness) of C2.
2. C1-C2 instability causing abnormal pressure on cervical nerves.
3. Vertebral artery compromise (Savitz and Caplan, 2005; Thanvi et al, 2005).
4. Cord compression (Bernhardt et al, 1993; Rao, 2002).

Traditional testing techniques of the cervical region included the Sharp-Purser test, which is a comparatively safe procedure to perform to test the excursion of movement when relocating the dens to the atlas, in order to assess the transverse ligament. Other more specific examination procedures included the tectorial membrane distraction and the alar ligament side flexion/bending and rotation tests (Cattrysse et al, 1997; Gibbons and Tehan, 2005).

However in more recent times, assessment of ligament stability has moved to systematically working through a series of active/patient generated, passive/therapist generated (with overpressure), and passive accessory movement tests, in order to feel the level of movement or restriction at each joint and therefore ligament integrity, as well as to reproduce the patient's symptoms.

Examples of appropriate active/patient generated tests for assessing cervical ligament integrity include:

- Atlanto-occipital joint isolation (nod)
- C1-C2 rotation with the neck flexed
- C2-C3 rotation with protraction and retraction
- Upper cervical quadrant.

Examples of appropriate passive/therapist generated (with overpressure) tests for assessing cervical ligament integrity include:

- Fixation of C1 via the transverse processes of C1 and passive flexion/extension of the occiput
- Fixation of the C2 spinous process with passive side bending or rotation of the occiput.

Examples of appropriate accessory movement tests for assessing cervical ligament integrity include (Gibbons and Tehan, 2005):

- Transverse atlantal ligament stress test (modified Sharp-Purser test)
- Alar ligament test.

(A useful resource for description of these tests is Mintken et al [2008], which includes reference to videos that are available online).

Signs of instability from the aforementioned tests may include:

1. Increase in motion or empty end-feel
2. Reproduction of symptoms of instability
3. Production of lateral nystagmus and nausea.

For each individual patient a decision needs to be made regarding the value of performing any craniovertebral ligament tests; evaluating the risks and benefits of any specific test procedure using current evidence from research investigating validity of testing (e.g. Kaale et al, 2008). In some situations, for example a post acute trauma presentation following road traffic accident, the best decision would be to support them with a collar pending radiological investigation.

Patients who have suffered cervical region trauma (e.g. whiplash) or who have pathological conditions (congenital e.g. Downs syndrome, inflammatory e.g. rheumatoid arthritis, or degeneration e.g. osteoarthritis) that may affect cervical spine ligament integrity require further craniocervical ligament screening.

5.3 Neurological examination

Examination of the peripheral and cranial nerves will assist in evaluation of the potential for neuro-vascular conditions (see Fuller, 2008 for a detailed description of how to perform testing).

5.4 Positional testing

Provocative positional testing is intended to provide challenge to the vascular supply to the brain and the presence of signs or symptoms of cerebrovascular ischaemia during or post testing is interpreted as a positive test. Sustained end range rotation is an advocated test, as it is the most provocative and reliable test (Mitchell et al, 2004). The pre-manipulative test position is also advocated (Rivett et al, 2006).

5.5 Palpation carotid artery

Palpation of the common and internal carotid arteries is possible due to the size of these vessels and their relatively superficial anatomy. Although no meaningful diagnostic utility statistics exist in relation to its precise role in differentiating potentially adverse outcomes, carotid palpation is conventionally used as part of a clinical work-up for carotid artery dysfunction (e.g. Cournot et al 2007; Cury et al 2009; Atallah et al 2010). Asymmetry between left and right vessels is considered. A pulsatile, expandable mass is typical of arterial aneurysm. Such a finding should be considered in context with other clinical findings. It is possible for dissections and disease of the carotid arteries to exist in the absence of aneurysm formation, therefore a negative finding should not be used to refute the presence of arterial dysfunction.

Palpation of the vertebral arteries is much less likely to provide meaningful information due to the small diameter of the vessel and its relatively inaccessible anatomy.

As pulse palpation is a relatively simple psycho-motor skill, training in this area should be focussed towards anatomical landmarks and vessel palpation. Furthermore, the physical therapist should aim to understand and experience both normal and pathological pulse quality. This training could be achieved within a physical therapist's local environment.

5.6 Differentiation

Differentiation of a patient's symptoms originating from a vasculogenic cause with complete certainty is not currently possible from the physical examination. Thus, it is important for the physical therapist to understand that headache/neck pain may be the early presentation of an underlying vascular pathology (Taylor & Kerry, 2010). The task for the therapist is to differentiate the symptoms by:

1. Having a high index of suspicion
2. Testing the vascular hypothesis

This process of differentiation should take place from an early point in the assessment process i.e. early in the patient history. The symptomology and history of patients experiencing vascular pathology is what may reveal the alert physical therapist to an underlying problem (Taylor & Kerry, 2010). A high index of suspicion of cervical vascular involvement is required in cases of acute onset neck/head pain described as "unlike any other" (Taylor & Kerry, 2010). Physical therapists may be exposed to patients

presenting with the early signs of stroke (i.e. neck pain/headache) and as such need both knowledge and awareness of the mechanisms involved. A basic understanding of vascular anatomy, haemodynamics, and the pathogenesis of arterial dysfunction may help the physical therapist differentiate vascular head and neck pain from a musculoskeletal cause (Taylor & Kerry, 2010) through interpretation of the patient history data and tests in the physical examination. Kerry and Taylor (2006) provide a summary of key physical examination tests and their value for differentiating vasculogenic head and neck pain, including: cervical rotation positional test, cervical extension positional test, BP examination, cranial nerve examination, eye examination, and use of hand held Doppler ultrasound.

5.7 Refer on for ultrasonography

There are no standardised clinical guidelines for medical diagnostic work-up in respect of vertebral and carotid dysfunction. It is recommended that the physical therapist follows local policy in referring for further investigation. Conventionally, duplex ultrasound, magnetic resonance imaging/arteriography, and computed tomography are used in the work-up (Cury et al 2009; Jones et al 2010). Being non-invasive and cheaper, duplex ultrasound is often considered first. The primary aim is to differentiate between haemorrhagic sources for the signs and symptoms and any other cause, as this will dictate the management pathway. It is recommended that physical therapists refer for immediate medical investigation when their clinical suspicion is supported by the reasoned historical details and clinical examination findings as suggested in this document.

Section 6: Risk v benefit analysis

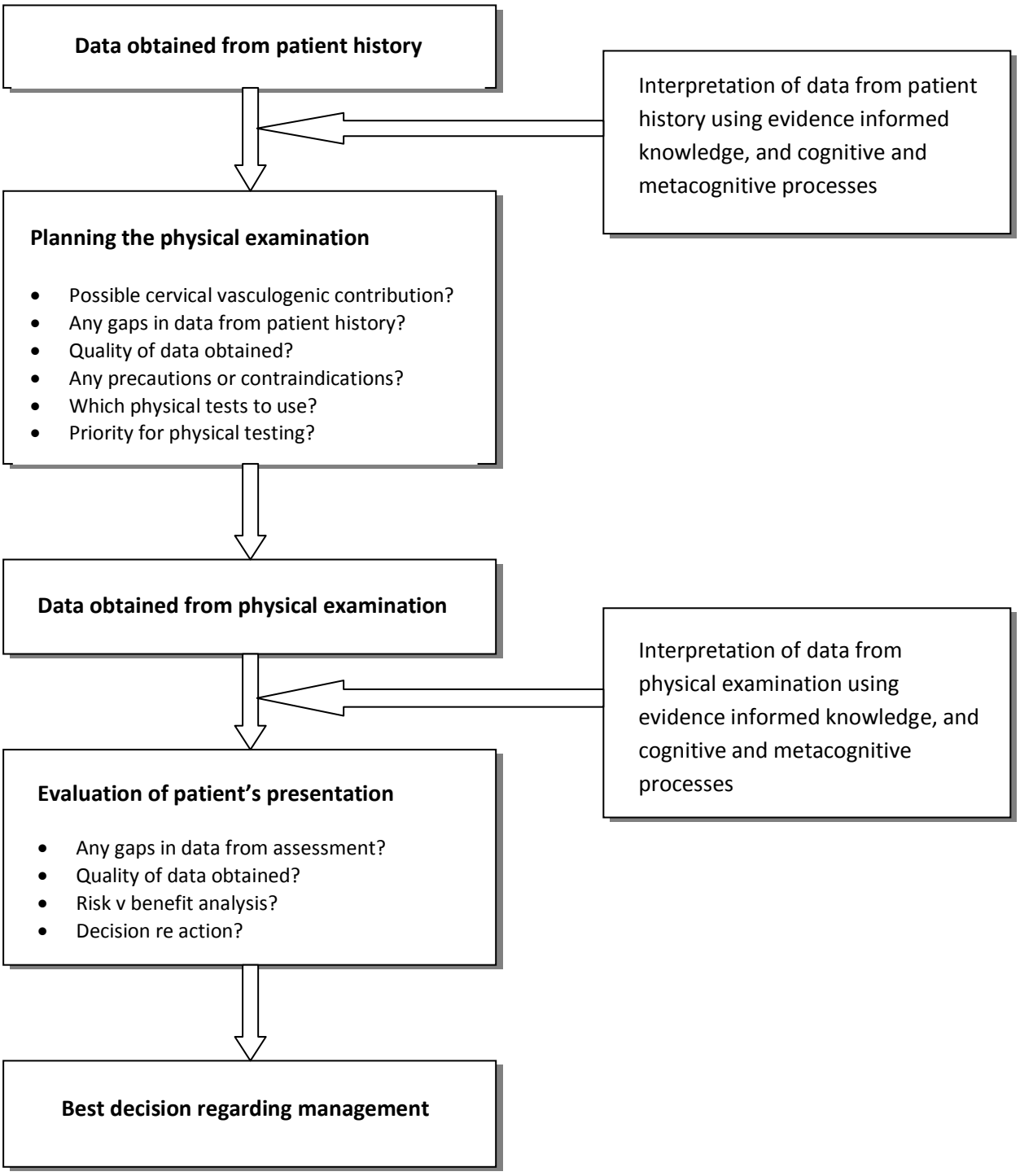
6.1 Framework for evaluating risk

Risk v benefit analysis: Data and evidence surrounding the clinical concern of this framework are incomplete and often contradictory. It is important to appreciate that an absolute diagnosis cannot be made by the physical therapist. The physical therapist must accept that the clinical decision is made in the absence of certainty and a decision based on a *balance of probabilities* is the aim of assessment. Although some presentations absolutely contraindicate manual therapy intervention, others suggest risk factors of potential adverse events and may co-exist with treatable musculoskeletal dysfunction. It is the responsibility of the physical therapist to make the best decision regarding treatment in these situations (Kerry and Taylor, 2009).

The following model provides a simple framework for decision-making regarding risk v benefit but should not be considered didactic:

Risk	**Benefit**	**Action**
High number/ severe nature of risk factors	Low predicted benefit of manual therapy	Avoid treatment
Moderate number / moderate nature of risk factors	Moderate predicted of manual therapy	Avoid or delay treatment / monitor and reassess
Moderate to high number/ Moderate to severe nature of risk factors	High predicted benefit of manual therapy	Treat with care / continual monitoring for change/new symptoms

Section 7: Flowchart of clinical reasoning



Section 8: Informed consent and medico-legal framework

8.1 Informed consent

Informed consent is both an ethical and a legal issue. This section provides physical therapists with information that represents a 'best practice' approach based on the literature and current generally accepted ethical and legal standards. Given the international audience of this document, MOs are advised to check local laws and health regulations affecting the informed consent process as the legal requirements may vary from country to country.

Informed consent can be defined as "The voluntary and revocable agreement of a competent individual to participate in a therapeutic or research procedure, based on an adequate understanding of its nature, purpose and implications" (Sim, 1986). The process of informed consent includes the following components: the types of consent, the requirements of disclosure of information by the therapist, how it is obtained, and the requirements of record keeping of the informed consent process. Note that informed consent is part of the process of decision-making or clinical reasoning. This acknowledges the importance of dialogue between the therapist and patient about treatment alternatives, in combination with the patient's preferences, so that mutually agreed upon choices of care can be made (Charles et al, 1997; Jones & Rivett, 2004). Further, it infers the importance of the patient's autonomy and that their right to make decisions throughout the treatment process is ongoing and not a one-off event (Delany, 2005).

8.2 Types of consent

Express consent is given explicitly either in writing or verbally (Sim, 1997) (e.g. the patient expressly states that they agree or signs a form indicating agreement). This is recommended when initially seeking informed consent for a cervical manipulation as it provides the clearest form of consent and often fulfills legal obligations.

Implied consent is not specifically indicated as in express consent, but is implied by some action which suggests consent (Sim, 1997) (e.g. after having a discussion with the physical therapist regarding treatment, the patient lays down on the treatment bed signaling that they are a willing participant). This form of consent is open to interpretation and is therefore less reliable upon legal scrutiny.

Tacit consent is failure of the patient to disagree or dissent (Sim, 1997). This form of consent is open to interpretation and is therefore less reliable upon legal scrutiny.

Embodied consent is assessment of the patient's body language for consent to treatment, prior to and during treatment (Fenety et al, 2009). Since express consent is initially recommended for cervical manipulation, embodied consent becomes important during the treatment. The body language of the patient should be observed specifically during the pre-manipulative hold and assessed for indications that they may be reconsidering the initial express consent that was given. If the therapist observes body language that may indicate the patient is uncomfortable with proceeding, the therapist should stop the procedure and ask the patient if it is acceptable to continue.

Whatever the form of the consent, it should be given voluntarily and without undue influence from the therapist, and once the patient has given consent they can withdraw their consent at any time during treatment.

8.3 Disclosure of Information

It is recommended that physical therapists provide patients with information about the proposed treatment procedures, particularly cervical manipulation or any technique involving end-range rotation. The emphasis on these two types of techniques compared to passive joint mobilisation or exercise is due to the larger evidence base for adverse events associated with cervical manipulation and end-range rotation techniques (Carlesso et al. 2010; Ernst 2004; Hurwitz et al. 1996; Rubinstein et al. 2005). The information provided can be communicated verbally or by written material, such as the information brochure provided in this document. The most prudent approach is to use both verbal and written communication (Purtillo, 1984). *Once again, MOs are advised to check local laws and health regulations affecting the informed consent process as the legal requirements may vary from country to country.*

Provision of the brochure is optional but allows patients time to consider the recommendations, ask questions, and make an informed choice overall. It can be given to the patient to read prior to treatment while they are in the waiting room or in the clinic. If the patient requires further time before making a decision, the brochure can be taken home for consideration. Provision of the brochure ensures that the information is standardised and allows for easy record keeping of the informed consent process by indicating that the brochure was given.

It is recommended that the information provided to the patient cover the following (note the brochure alone does not cover all of this) (Appelbaum et al. 1987; Wear, 1998):

- ✓ It must be specific to the proposed treatment.
- ✓ It must cover alternative treatment options.
- ✓ It must cover benefits and risks of the proposed treatment and alternatives.
- ✓ When cervical manipulation is presented to the patient as a treatment option, it is recommended that risk information include risks of common adverse responses and the remote but specific risks of **stroke** and related **death**. Mention of all risks, but specifically the serious rare ones, fulfills the legal requirements of providing information of any known risks that a reasonable person would want to know.

Omission of any of the above information may invalidate the consent of the patient. It is the responsibility of the physical therapist to ensure that the patient fully understands all of the information that has been provided. It is also the responsibility of the physical therapist to provide further information requested by the patient and to answer all questions asked by the patient in a manner that the patient considers satisfactory (Wear, 1998).

8.4 Obtaining informed consent

Informed consent is obtained when a patient explicitly indicates either verbally or in writing, following adequate disclosure of information about the proposed procedure, their consent to proceed with the treatment. Consent must be obtained **before** treatment begins. Asking the patient for consent while treatment is in progress may adversely influence the patient's decision-making and is not recommended (Jensen, 1990).

For changes in treatment (introducing a new or different technique), the full process of informed consent must be undertaken and consent explicitly obtained verbally or in writing.

e.g. You have been treating a patient using cervical mobilisation. The patient has not responded as you had hoped and you would like to now try cervical manipulation. Cervical manipulation is considered to be a new or different treatment to cervical mobilisation. Therefore, if the initial process of obtaining informed consent did not include information pertaining specifically to cervical manipulation, such as the risk of stroke or death, one must specifically gain informed consent for the use of cervical manipulation prior to its application.

For continuation of the same treatment (cervical manipulation), it is recommended that consent be obtained **each** time it is used. This does not necessarily entail the full disclosure of information that was required the first time. Agreement by the patient verbally to the ongoing use of cervical manipulation in most cases would be sufficient. If however, in follow up discussion with the patient, you perceive that there is a lack of understanding of the previously disclosed information, it is recommended that the full process of disclosure of information be revisited.

8.5 Recording of informed consent

It is recommended that the disclosure of information and the obtaining of informed consent be recorded in a standardised manner in the patient's clinical record when cervical manipulation is initially employed. For each treatment where cervical manipulation is employed, it is recommended that the obtaining of informed consent be recorded each time. The use of stickers (one for the initial informed consent process and one for follow up visits) is suggested to standardise and facilitate ease of recording.

RECORD OF INFORMED CONSENT (initial treatment)	**RECORD OF CONSENT (continuation of treatment)**
Proposed treatment procedure**:** _____ Method(s) used to provide information**:** ☐ Verbal ☐ Written Discussion of treatment covered: ☐ What the treatment involves ☐ Potential benefits and risks of the proposed treatment ☐ Alternatives to the proposed treatment ☐ Opportunity for the patient to ask questions ☐ Questions asked and answered ☐ Opportunity for patient to select alternative treatment Therapist signature: _____ Date: _____ Time:_____ I confirm that: ○ I have been adequately informed about the proposed treatment ○ I have understood the information provided ○ I consent to the proposed treatment Patient signature: _____	Treatment procedure:_____ _____- _____ ☐ Patient has been directly asked for consent to continue the use of the above treatment procedure ☐ Opportunity for the patient to ask questions ☐ Opportunity for the patient to select alternative treatment Therapist signature: _____ Date: _____ Time: _____ I confirm that: ○ I have adequate understanding of the treatment ○ I consent to ongoing use of the treatment Patient signature: _____ Date: _____ Time : _____

The physical therapist should tick each bullet point, with care taken to record the date and exact time at which consent was given. This is particularly important if the physical therapist needs to seek consent for more than one procedure in one treatment session. It is essential that consent for each procedure is recorded separately. Although in some jurisdictions it may not be legally necessary to obtain written consent from the patient for any cervical procedure, including manipulation, it is recommended that signed consent is obtained prior to manipulation (Purtillo, 1984).

Section 9: Safe OMT practice

9.1 Range of techniques recommended as good practice

OMT practice encompasses a wide range of therapeutic manoeuvres from patient activated forces to therapist activated forces. OMT is integrated into the overall management strategy of patient care. Reports of patient harm from OMT in the cervical region have typically been in the area of cervical manipulation.

The following are necessary considerations for the physical therapist during the selection and application of cervical manipulation (Childs et al, 2005):

- Patient safety and comfort form the basis of appropriate technique selection.
- Cervical manipulation techniques should be comfortable to the patient.
- Cervical manipulation techniques should not be performed at the end of range of cervical motions, particularly extension and rotation.
- The use of the supine lying position with the patient's head supported on a pillow is encouraged. This position allows the physical therapist to monitor facial expressions, eye features, etc. It also provides additional support to keep the patients neck out of an extended posture.
- The patient response to all cervical spine movements, including cervical manipulation interventions is continuously monitored.

9.2 Alternative approaches to direct cervical treatment.

Emerging pain sciences suggests that the effects of manual techniques (such as mobilisation and manipulation) on pain may be largely neurological in nature and not limited to the direct influence of a particular spinal motion segment. Furthermore, clinical trials have reported that thoracic spine manipulation results in improvements in perceived levels of cervical pain, ranges of motion, and disability in patients with mechanical neck pain (Cleland et al, 2005; 2007; Krauss et al, 2008; Gonzalez-Inglesias et al, 2009), although the mechanism by which this occurs is not known. Given the concern regarding the risks of cervical spine manipulation, thoracic spine manipulation provides an alternative, or supplement to, cervical manipulation and mobilisation to maximise the patient's outcome at an extremely low level of risk. The current evidence suggests that during the initial treatment sessions that there is a large likelihood of improved patient outcomes when thoracic manipulation is coupled with cervical active range of movement exercises (Cleland et al, 2005; 2007; Krauss et al, 2008; Gonzalez-Inglesias et al, 2009). Subsequent sessions can then introduce more direct manual cervical treatments if warranted. This approach allows the therapist to observe the patient's response to treatment over a longer time period and theoretically minimises the risks associated with cervical manipulation in the presence of an emerging cervical vascular disorder, such as dissection.

9.3 Frequency of treatment

Frequency of treatment will vary depending on the individual and injury in question. Current evidence suggests that manual interventions should be coupled with therapeutic exercise when managing a patient's neck pain and headache (Jull et al, 2002; Kay et al, 2005; Walker et al, 2008).

9.4 Minimising end-range cervical techniques

End of range movements are known to stress the cervical arteries and potentially neural structures. Thus avoidance of these positions is recommended during cervical manipulation (Hing et al, 2003).

9.5 Force minimisation

Manual therapy techniques used to treat the cervical region should be applied in a controlled, comfortable manner in mid ranges of cervical movement in order to reduce the potential strain on vascular and neurological structures. The leverage of the head and cervical spine segments not included in the manipulation can be used to direct loads to the targeted segment. Therefore by doing this, there is little stress on the rest of the neck and the elimination of cervical spine locking positions (Hing et al, 2003).

9.6 Monitor for any adverse effects

Monitoring the patient for response to treatment and any adverse effects is a continual process throughout and after the treatment session. Verbal and physical examination can be carried out while performing a treatment technique through monitoring physical body behaviour, facial expression, muscle tone, and verbal communication/responsiveness. Grading scales designed by Maitland et al (2001) and Kaltenborn (1989) can be used to guide the therapist and as an objective measure of the patient's progress. Similarly, in the osteopathic model, there is considerable emphasis placed on the physical examination of the joint 'barrier' (Greenman 1966; Hartman 1997) and end-feel. Movement diagrams (Maitland et al, 2001) and components of the physical examination can be reviewed post treatment to assess for changes in the physical behaviour of the cervical region. However, the ultimate standard of response should be based on the change on a patient-centered outcome measure (e.g. Neck Disability Index, Global Rating of Change, etc).

9.7 Emergency management of an adverse situation

As a medical professional, the physical therapist is expected to act swiftly and judiciously when confronted with an emergency situation. If a patient becomes unresponsive during any aspect of physical therapy care, the physical therapist should immediately implement an emergency action plan for cardiopulmonary resuscitation. Emergency help should be sought immediately, such as calling for an ambulance.

Section 10: Teaching OMT for the cervical region

10.1 Framework for those teaching cervical assessment and management

A variety of manual assessment and intervention techniques are being used in the assessment and management of the cervical spine. The reports of patient harm from OMT in the cervical region have typically been in the area of cervical manipulation. The teaching of OMT for the cervical region requires instructors have a thorough understanding and proficiency in:

- assessment for pathology that is outside the usual physical therapist scope of practice
- interpretation of musculoskeletal diagnostic imaging
- the use of tools to determine baseline status, treatment outcomes, and prognostic indicators
- neuromusculoskeletal examination to include sensory-motor function and ligamentous integrity
- palpatory skills of the cervical region
- differential diagnosis and clinical reasoning

Practical skills teaching and examination of competency are necessary components of manipulation instruction at all levels of physical therapy education programmes. Based on the available literature, instruction should particularly emphasise the continuum of the amplitude, velocity, patient comfort, and sensitivity and specificity of handling during manipulation tutoring (Flynn et al, 2006; Mintken et al, 2008).

10.2 Recommended qualifications for instructors

Educational qualifications for first professional (entry-level) and post-professional training instructors vary across the world. However, recommended attributes of instructors responsible for teaching the cognitive and psychomotor skills used in cervical manipulation are described below (these are provided to guide educational programmes when planning instructor development processes and resources). Importantly, instructors should:

1. Be actively engaged in clinical practice within the area of their expertise and instruction.

2. Possess teaching experience that preferably includes mentoring or formal training in adult educational processes and methods.

3. Apply evidence-based concepts within both their clinical practice and teaching.

4. Be trained and examined in didactic and psychomotor areas of manual therapy, including manipulation, or the equivalent.

5. Have completed a formally accredited (by an IFOMPT recognised national body) post-professional programme in manual therapy.

6. Regularly undertake ongoing professional education and training relevant to cervical manipulation.

The instructor should be appropriately qualified to ensure that the student can:

1. Demonstrate competency in both performing and interpreting examination procedures appropriate for physical therapy management and prevention of musculoskeletal disorders of the cervical spine.

2. Demonstrate competency in both the technical application and interpretation of response to manipulative interventions utilised in the management of musculoskeletal disorders of the cervical spine.

Furthermore, specific safety precautions associated with manipulation in general and manipulation in the cervical spine are a necessary component of instruction. Students should be competent in making decisions regarding when to utilise manipulation, and when to refer to a physician or other practitioner based on safety or other medical concerns.

10.3 Educational resources

When teaching manipulation techniques in the cervical region it is essential to present techniques which are easy to understand and implement in the clinical setting. There is a vast array of physical therapy and medical resources that describe the management of cervical spine disorders, including those related to manual and manipulative therapy. Physical therapists should be well versed in current best evidence for managing cervical disorders. This document does not endorse any specific philosophy or approach to manipulation, however the physical therapist is responsible for choice, application, and monitoring of responses to manipulative techniques following the principles outlined in this document.

Section 11: Proposed response to the media: key message to communicate

Occasionally physical therapists are approached by the media to make comment on cervical manipulation and its associated risks. The following guidelines may be of use in responding to such requests:

- Physical therapists should only comment on the practice of OMT within their profession and refrain from commenting on the practice of other professions.
- Registration/certification to practice as a physical therapist requires rigorous professional entry competencies and professional standards to be met by the educational programme.
- A rigorous national and international process ensures the standards for OMT for each educational programme in each country which is a MO of IFOMPT. The OMT academic curriculum includes the study of anatomy, biomechanics, physiology, pathology, function and physical examination and treatment.
- This OMT curriculum meets the international educational standards set by the International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) (a subgroup of the World Confederation for Physical Therapy, a member of the World Health Organisation) and provides a strong foundation for manual therapy, including spinal joint manipulation in physiotherapy practice.
- Graduates of OMT are highly educated in the use of spinal manipulation with selected patients and for specific neuromusculoskeletal conditions to reduce pain, improve mobility and optimise function. Spinal manipulation is not appropriate for use in all clinical situations or with all patients.
- Spinal manipulation may be combined with other treatments, such as a therapeutic exercise program, in the care plan for an individual patient.
- Physical therapists who practice OMT are committed to the delivery of evidence-based, safe, and effective health care and minimise the risks associated with spinal manipulation by:
    - Conducting a thorough assessment prior to treatment to screen for patients who may be at risk. Patients are reassessed after all treatments.
    - Using spinal manipulation only when it has been determined to be the best treatment choice. A decision to proceed with manipulation is based on all the clinical findings from the patient history and physical examination.
    - Informing the patient about associated risks and obtaining the patient's informed consent for the treatment through a shared decision making process.
- OMT management includes information on maintaining treatment effectiveness through appropriate exercises and other self-management, as well as how to identify and respond to the development of any adverse effects that may occur subsequent to treatment.
- OMT physical therapists are at the forefront of research on the safety and efficacy of manipulation. For example, IFOMPT is leading an international collaboration on 'best practice' for cervical spine assessment.
- Key reference recommendations (Bronfort et al, 2004; Rubenstein et al, 2005; Gross et al, 2007; IFOMPT, 2008; Kerry et al, 2008).

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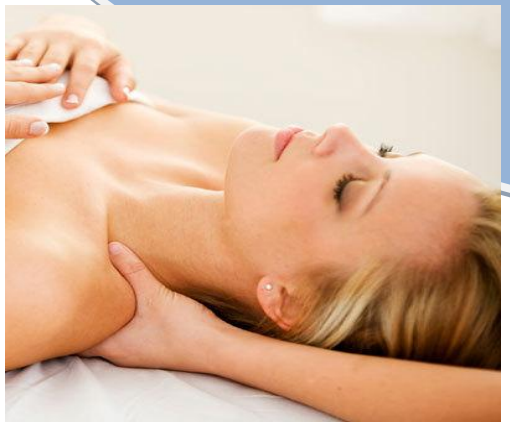
Appendix: IFOMPT Brochure

Potential Adverse Events

The neck is made up of seven vertebra that are connected by ligaments, discs, muscles and joints. Within this spinal column is the spinal cord and important arteries. The spinal cord transmits important information to the brain and the arteries supply blood.

Neck manipulation is commonly performed by physical therapists with specialised training in manipulative techniques. Research evidence indicates that neck manipulation is safer than taking anti-inflammatory drugs that are commonly prescribed for musculoskeletal conditions[1]. However in very rare circumstances, adverse events can occur. These may involve injury to the arteries in the neck with the potential to cause a stroke or even death. There is also a small risk of damage to the bones, muscles, ligaments or nerves which can produce pain into the arm.



Orthopaedic manipulative physical therapists are trained to know how, when, and where to use manipulation. Their experience and expertise in applying these techniques safely and effectively will help guide you in your decision making about your treatment. If there is any indication that you are at risk, your physical therapist will advise you and use alternative techniques. Remember to discuss any concerns that you have. Your safety and comfort are a priority in your care.

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Local association logo

Neck Mobilisation and Manipulation

The Facts Explained

Patient Information

Local

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The Facts on Neck Mobilisation and Manipulation

There are a variety of proven treatments and techniques used by orthopaedic manipulative physical therapists to treat conditions affecting the muscles, joints and nerves. Mobilisation and manipulation are two highly effective techniques, particularly for the relief and prevention of neck pain. Mobilisation can be described as pressure by hand, slowly coaxing movement of individual joints, while manipulation is defined as a controlled quick movement of a joint that often produces a popping or clicking sound.

Effective treatment to reduce pain and restore normal activity

Your Orthopaedic Manipulative physical therapist

An Orthopaedic Manipulative physical therapist is a highly qualified health care professional who specialises in the assessment, treatment and prevention of disorders affecting the muscles, joints or nerves. Orthopaedic Manipulative physical therapy involves the skilled application of specialised treatment to decrease pain, restore movement and prevent further problems. Your therapist has extensive postgraduate training in musculoskeletal disorders, and advanced skills in pain management,practical skills in mobilisation, manipulation, and massage, as well as exercise prescription for flexibility and strength. Orthopaedic Manipulative physical therapists have extensive experience and expert knowledge in musculoskeletal health.

What to Expect

On your first visit, your Orthopaedic Manipulative physical therapist will analyse your problem by taking a complete history, assessing your posture, examining your movement and conducting specific tests on your muscles and nerves. By collecting all of this important information, your therapist will be able to determine the most appropriate course of treatment for your condition. By asking questions of your therapist about your condition, your treatment options and potential results, the two of you can determine what the best course of treatment is for you. Your therapist will be happy to discuss any concerns you may have. Your comfort and safety during treatment are a priority. After your first treatment you should have less pain and be more comfortable in your movement. As well, you will have a good understanding of your problem and how to start managing it. Some patients may experience mild post treatment soreness for the first 24 hours after your visit. Sometimes dramatic relief is experienced after just one visit. More often it will take several visits before your problem is resolved.

Examination Prior to Manipulation

Although extremely rare, it is possible that manipulative treatment of the neck could lead to an injury of the arteries or nerves in the neck. To optimise your safety, your therapist will carry out an assessment prior to performing manipulation to check for any potential disturbances in the function of your nerves or blood supply. This will include a physical examination as well as questions. If there is any indication of abnormal function, the therapist will modify the examination and treatment of your neck to maximise your safety.

IFOMPT International Collaboration

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