CHIR8501

Neuromusculoskeletal Diagnosis 1

Session 1, Weekday attendance, North Ryde 2020

Department of Chiropractic

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
Admission to MChiroprac and (CHIR3106 or CHIR316) or (CHIR6110 or CHIR602) and (CHIR6111 or CHIR603) and (CHIR6302 or CHIR604) and (CHIR6303 or CHIR605) and (CHIR6410 or CHIR606) and (CHIR6510 or CHIR608)

Corequisites

Co-badged status

Unit description
This unit introduces you to common neurological and orthopaedic conditions. A variety of teaching methods are employed, from lectures based on current evidence that are also made available online, to tutorials that are underpinned by a social constructivist approach to building knowledge, using the discussion of case studies to develop diagnostic skill. You will develop competency in neurological and orthopaedic examination and in developing a differential diagnosis based on the patient's signs and symptoms at clinical presentation. The knowledge and skills acquired during this unit are fundamental for diagnostic competence in chiropractic practice.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Perform the clinical neuromusculoskeletal history taking and examination competently

ULO2: Draw on acquired theoretical knowledge in order to tailor the physical examination to the clinical presentation of the patient, and from this develop a differential diagnosis and clinical management plan.

ULO3: Use clinical reasoning skills to determine conditions that are suitable or contraindicated in chiropractic care

ULO4: Find, select and critique appropriate literature to direct clinical diagnosis and management. Use acquired knowledge to evaluate conditions, research these cases further using appropriate reference material and communicate findings

ULO5: Participate in practical sessions in which the knowledge acquired from texts and lectures is applied in a group situation. Reason, question and communicate your understandings to each other and your tutors

ULO6: Develop a respect and empathy for patients, and an ethical and professional attitude to health care. In this regard, you should develop a commitment to remain informed and up-to-date in your profession

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult iLearn for revised unit information.

Find out more about the Coronavirus (COVID-19) and potential impacts on staff and students

General Assessment Information

Assessment Tasks Description

1. **Orthopaedic Assignment**: Students are to work in groups of maximum five students to critique a systematic review and meta-analysis of a specific intervention for a musculoskeletal condition.
2. **OSCE:** These will assess your competency in performing the neurological and orthopaedic examinations.

3. **Final examination**: This will cover the content of each strand for the entire semester. It tests your knowledge of the theory, and the ability to connect that knowledge to real life situations (e.g. case studies, clinical presentations). It will consist of a 3 hour written exam with multiple choice questions, short answer questions and case studies.

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Delivery mode

This unit is characterised by a moderate degree of flexibility. It incorporates a variety of learning tools and media. It will comprise:

	Strand 1 - Orthopaedics	Strand 2 – Neurology	Total
Lectures	1-2 × 2 hour lectures per week **Lecture 1:** Monday 3pm-5pm (14SCO-T2), weeks 1-12 **Lecture 2:** Wednesday 9am–11am (14SCO-T2), weeks 3-11, 13	1-2 × 2 hour lectures per week **Lecture 1:** Tuesday 10am-12 am, 14SCO-T2, weeks 1-12 **Lecture 2:** Wednesday 9am–11am (14SCO-T2), weeks 1, 2, 12	6 hours per week, weeks 1-12
Tutorials	1 × 2 hour tutorial class per week, weeks 2 – 12 Thursday 9-11am or 11am-1pm (11WW 330 South Lab)	1 × 2 hour tutorial class per week, weeks 2 – 12 Wednesday 2-4pm or 4-6pm (11WW 330 South Lab)	4 hours per week, weeks 2-12
Other	1-2 hours per week revision, self-instructional learning and readings	1 - 2 hours per week revision, self instructional learning and readings from the text	2.5 hours per week

Please note that the venues are subject to change until just before the start of the semester. So, for further details on class time and locations for this unit follow the link below:

http://students.mq.edu.au/student_admin/timetables

Unit Web Page

You can log in to iLearn System via the link listed below:

https://ilearn.mq.edu.au/login/MQ/

All lecture materials will be posted on ilearn, and there is also a link to ECHO360 for **audio** recordings and livestreaming of the lectures.

Required and recommended resources

Strand 1: Orthopaedics

Notes are summarised under 'Lectures' on iLearn for CHIR 8501

Required:

1. **Magee D.J.** (2013). Orthopaedic Physical Assessment. 6th Edition. W.D Saunders, Philadelphia

Recommended Reading

1. **Brukner P, Khan, K.** (2011) Brukner & Khan's Clinical Sports Medicine. 4th Ed. McGraw-Hill Book Company Australia.
2. **Souza TA.** (1997) Differential Diagnosis for the Chiropractor. Aspen Publications.
3. **Hammer W.** 3rd Ed. Functional Soft Tissue Examination & Treatment by Manual Methods. Jones and Barlett, Sudbury Massachusetts.
4. **Evans RC.** (2008) Illustrated Orthopaedic Physical Assessment. Mosby.

NOTE: Weekly tutorial case reports, clinimetric tools, and readings will be made available through iLearn.

Strand 2: Neurology

Required:

1. CHIR8501 - Neurology *Tutorial Course Manual* 2020– This has been uploaded to iLearn. Please be sure to either download, print and bind the manual, or have an ipad or laptop

to access the manual during the tutorial.

Recommended:

- Blumenfeld H (2010) *Neuroanatomy through Clinical Cases*. 2nd ed. Sinauer Associates Inc, Massachusetts. Distributed by Palgrave Macmillan, Victoria, Australia.
- Souza TA (2005) Differential diagnosis and management for the chiropractor 3rd ed. Jones & Bartlett Pub, Massachusetts.
- Bickley LS (2009) *Bate's Guide to Physical Examination and History Taking 10th ed.* Wolters Kluwer/Lippencott Williams & Wilkins, PA

Required Diagnostic Equipment (Neurological Diagnosis Kit):

1. A diagnostic set with otoscope and ophthalmoscope (Welsh Allen series 97200-BI recommended - ~$515)
2. A tailor's measuring tape
3. A 128Hz or 256Hz (vibration) **and also** a 512Hz (auditory) tuning fork (Al weighted)
4. Neurotips (no sewing pins or pinwheels allowed strictly by WHS/Biosafety regulations)
5. Large stem ear buds
6. Disposable tongue depressors
7. Tomahawk reflex hammer
8. A number of tactile items e.g. key, coin etc
9. A compass:

A note about textbooks:

Textbooks for this unit can be purchased online from Booktopia **https://www.booktopia.com.au/coop** ".

The list of Macquarie University S1 2020 units and texts can be found on the **Booktopia website**.

Unit Schedule

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult iLearn for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Strand 1: Orthopaedics

A systematic approach will be applied to the regional diagnosis of common lumbopelvic and lower extremity conditions. The primary outcome is the ability to form a clinical impression (working diagnosis) for various patient presentations, including physical appearance, clinical history taking, physical examination and review of additional diagnostic information from paraclinical studies e.g. X-ray.

A review of anatomy and biomechanics (affirmation of assumed knowledge) of the lower extremity regions (hip/thigh, knee/leg, ankle/foot) will precede dialogue of lower extremity conditions/pathologies. The aspects of each condition/pathology will include: epidemiology, aetiology, pathogenesis and diagnosis and prognosis. The management (including therapeutic intervention) of lower extremity conditions will be not be covered in great depth and is intended only to provide detail for the natural history of each condition. Conditions of the lower extremity by region will include:

- Trauma (fractures, dislocations and soft tissue tears)
- Joint instability and arthritides (including capsular patterns of limitation)
- Congenital and developmental anomalies
- Overuse injuries
- Common sports injuries
- Entrapment neuropathies of the lower extremity

The assessment of the lower extremity regions will include:

- History and observation
- Clinimetrics
- Static palpation including borders of triangles etc.
- Range of motion assessment (active and passive range of motion and resisted isometric movements)
- Orthopaedic special tests (OSTs)
- Discussion of neurological, vascular and functional assessment along with discussion of relevant paraclinical procedures for each condition

TIMETABLE

Orthopaedics Timetable

WEEK	LECTURE 1	LECTURE 2	Tutorial

1	Introduction to Orthopaedics (M.Fernandez)	Neurology Lecture	No Tutorial
2	Lower Back Pain due to Serious pathology (M.Fernandez)	Neurology Lecture	Orthopaedic Assessment of the Lumbar Spine – Part I
3	Lower Back Pain with Associated Radiculopathy I (M.Fernandez)	Lower Back Pain with Associated Radiculopathy II (M.Fernandez)	Orthopaedic Assessment of the Lumbar Spine – Part II
4	Lumbar Spine Spondylosis and Stenosis (M.Fernandez)	Lumbar Spine Spondylolysis and Spondylolisthesis (M.Fernandez)	Orthopaedic assessment of Lumbar Spine Stability, and Generalised Hypermobility
5	Lumbar Instability and Hypermobility (M.Fernandez)	Non-Specific Lower Back Pain (M.Fernandez)	Orthopaedic Assessment of the Sacroiliac Joint and Coccyx
6	Disorders of the sacroiliac Joint and Coccyx (M.Fernandez)	Leg Length Discrepancy (M.Fernandez)	Orthopaedics OSCE 1
7	Orthopaedic Assessment of the Older Patient (M.Fernandez)	Soft tissue causes of hip pain (M.Pribicevic)	Orthopaedic Assessment of the Hip - Part I
Good Friday, 10 April – Sunday, 26 April: Mid-semester Break			
8	Myofascial & neural causes of hip pain (M.Pribicevic)	Osteological Causes of Hip Pain (M.Pribicevic)	Orthopaedic Assessment of the Hip - Part II and Knee - Part I

9	Meniscal and cruciate ligament injuries (M.Fernandez)	Collateral injuries, rotatory instability and myofascial disorders of the knee (M.Fernandez)	Orthopaedic Assessment of the Knee – Part II
10	Patellofemoral and growth plate disorders of the knee (M.Fernandez)	Injuries of the lower leg (M.Pribicevic)	Orthopaedic Assessment of the Foot and Ankle - Part I
11	Joint & ligament disorders of the ankle (M.Pribicevic)	Conditions and Disorders of the foot (M.Pribicevic)	Orthopaedic Assessment of the Foot and Ankle - Part II
12	Review Lecture (M.Fernandez)	Neurology Lecture	Orthopaedics OSCE 2
13	No Lecture	No Lecture	No Tutorial

Strand 2: Neurology

A number of topics are covered that relate to common patient neurological presentations. The aetiology, clinical presentation (symptoms and signs), relevant neuroscience and neuropathology, and latest research, are revised and discussed. Students develop the skill of differential diagnosis. Clinical neurological examination is taught in tutorials. The lectures cover the neurological examination from a theoretical perspective and evaluate the diagnostic test accuracy and clinimetric aspects of examination, as well as provide the depth of theory required for strong differential diagnosis. A strong component of this course is the evaluation of history taking, neurological testing and differential diagnosis through case studies and OSCEs.

Clinimetrics focuses on the quality of clinical measurement. A link to a paper on this topic is available on ilearn in the neurology tutorial section: de Wet HCW, Terwee CB, Bouter LM (2003) Current challenges in clinimetrics. Journal of Clinical Epidemiology 56: 1137 – 41

Topic 1: Neurodynamic testing ("nerve tension tests") and mobilisation techniques

Students acquire skills in the competent practical application of upper and lower limb neurodynamic tests and mobilisation techniques

Topic 2: Pain

The pain sensory pathways and the pain suppression pathways are revised. The research on chronic pain is discussed, and the differences among acute physiological nociceptive pain, pathophysiological nociceptive pain and neuropathic pain are analysed. Common pain presentations, prognosis and management are discussed.

Topic 3: Altered cognition

Some of the conditions that result in cognitive impairment and altered thought processing are explored and the red flag conditions are highlighted. The discussion includes cognitive impairment, memory loss, dementia, brain trauma, acute confusional states and seizures. The mental status examination is fully elaborated.

Topic 4: Psychiatric disorders

The basis of the classification of psychiatric disorders and an overview of major classified conditions are discussed and critiqued.

Topic 5: Seizures

Seizures are classified and each type is discussed with regard to aetiology, pathophysiology, clinical manifestations and diagnosis.

Topic 6: Eye presentations

Common eye problems are explored, including extraocular eye muscle palsies, strabismus, decreased visual acuity, reduced visual fields and abnormal fundal findings on ophthalmic examination. The integration among visual input, proprioception and vestibular input for control of posture, movement and balance is discussed, and the postulated functional consequences of deficits in this integration are explored.

Topic 7: Hearing and balance presentations

The common presentations of hearing loss are discussed. The multisensory integration in vestibular processing is explored and its importance in gaze stabilisation, head orientation and posture during movement. The vestibular-ocular pathways are revisited, and the vestibular reflexes are covered. The possible causes, mechanisms, clinical presentation and neurological testing for vertigo are outlined. The differential diagnoses for central and peripheral vertigo are discussed, and the evidence for abnormal cervical proprioceptive input as a cause for dizziness is considered. Management of common conditions is discussed.

Topic 8: Cerebrovascular disease and Neoplasms

The blood supply of the nervous system is revised. The cascade of biochemical events that occur following cerebral ischaemia is discussed, and the consequent functional losses are covered. The clinical manifestations and diagnostic evaluation of cerebrovascular accident/stroke (thrombotic, embolic, haemorrhagic, lacunar) are discussed.

The classification, common location, clinical manifestations and prognosis of intracranial tumours are discussed.

Topic 9: Lesions of the Spinal Cord and localisation of the lesion

The sensory and motor pathways in the spinal cord are revised. Spinal cord trauma is an area of focus, and the causes and consequences (including initial spinal cord shock and autonomic hyper-reflexia) are described. History taking, neuroexamination and clinical differentiation between upper and lower motor neuron lesions are discussed. Weakness patterns and localisation of the lesion are described, and presentations of common lesions, and their differential diagnoses are reviewed.

Topic 10: Common Lesions of the Nervous System

The aetiology, symptoms and signs and differential diagnosis of common central and peripheral lesions of the nervous system are covered. Neuronal damage, the classification of nerve injury, plasticity, regeneration and neurogenesis are reviewed.

The Neurology Timetable:

Week	Start Date of week	Lecture (Tuesday, 10 – 12 am)	Lecture (Wednesday, 9-11am)	Tutorial (Wednesday 2 - 4, 4 - 6 pm)
1	24 Feb	Introduction to Clinical Neurology. Pain I	Neurodynamic Tests	None
2	2 Mar	Pain II	Neurodynamic Tests and Mobilisations	Neurodynamic Tests
3	9 Mar	Altered cognition		Neurodynamic Tests and Mobilisations
4	16 Mar	Psychiatric disorders		Neurological History Taking The Neuroexam: mental status
5	23 Mar	Seizures Eye Presentations I		Neuroexam: mental status
6	30 March	Eye Presentations II Hearing and Balance Presentations I		Neuroexam: cranial nerves
7	6 April	Hearing and Balance Presentations II		Neuroexam: cranial nerves

	Good Friday, 10 April – Sunday, 26 April: Mid-semester Break			
8	**27 April**	Cerebrovascular Disease and Brain Neoplasms		Neuroexam: OSCE
9	**4 May**	Lesions of the Spinal Cord and Localisation of the Lesion		Neuroexam: cranial nerves
10	**11 May**	Lesions of the Spinal Cord and Localisation of the Lesion continued		Neuroexam: motor
11	**18 May**	Common Lesions of the NS		Neuroexam: motor
12	**25 May**	Common Lesions of the NS continued	Common Lesions of the NS continued	OSCEII
13	**1 June**			

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (http

s://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

A greater emphasis will be placed on case studies during tutorials, with the use of the Chiropractic Decision Aid, The Clinical Decision Framework. This tool is used in a number of units in the Master of Chiropractic degree. Tutorials will also include the role playing of case studies.