

Lumbar Radicular Syndromes

AT A GLANCE



A QUICK REFERENCE GUIDE TO:

Myotomes

Dermatomes

Radicular Pain +/- Radiculopathy

Radicular Claudication

And More...

Adam Dobson

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*PLEASE REMEMBER – THIS GUIDE IS NOT A REPLACEMENT FOR CLINICAL REASONING.
IF YOU ARE UNSURE GET ADVICE*

Adam Dobson

How To Use

Disclaimer

Anatomical and biological variance is normal and so this information should be used as guide only and is not a replacement for clinical reasoning.

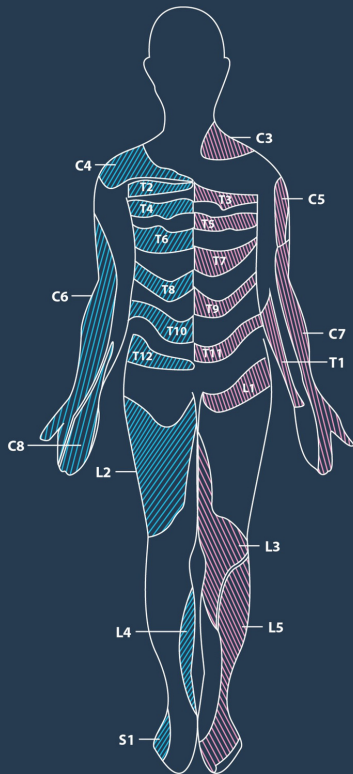
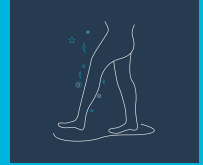
This booklet will not cover all aspects of an assessment but rather pertinent information crucial to interpretation in these conditions.

As with any medical disorder consider how long symptoms have been present, stability, frequency and likely explanation.

Thank You for choosing this At A Glance reference guide for Lumbar Radicular Syndromes

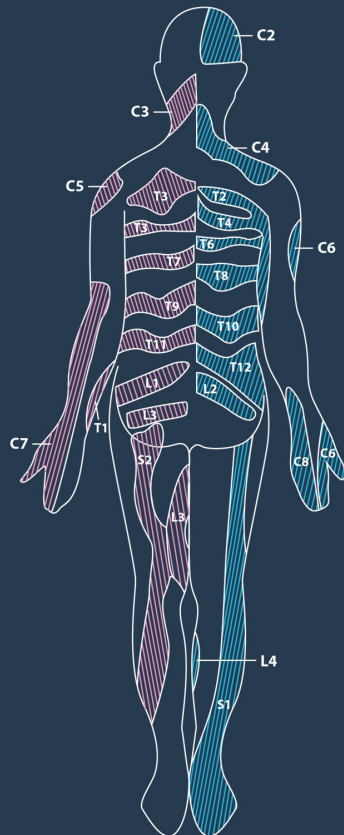
Dermatomes

AT A GLANCE

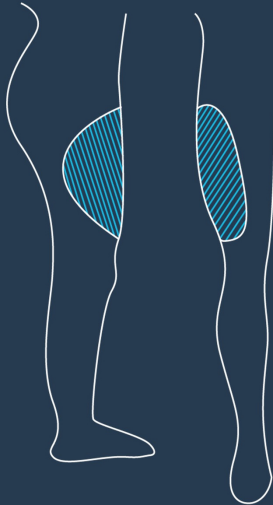
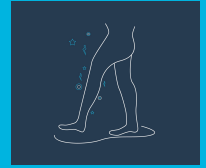


Anterior

Posterior



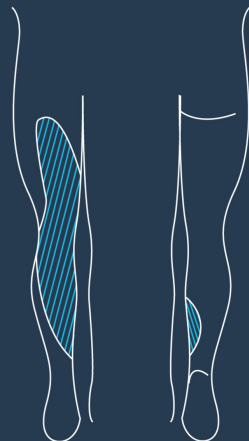
Peripheral Sensory Territories AT A GLANCE



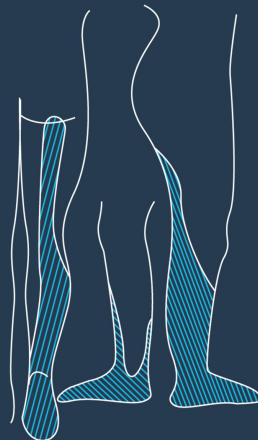
Lateral Femoral
Cutaneous Nerve



Common Peroneal
Nerve



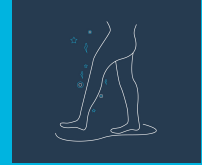
Femoral Nerve



Sciatic Nerve

Myotomes

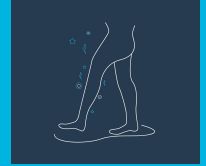
AT A GLANCE



Key lumbar nerve root levels with their chief muscle actions

L1-L2	Hip Flexion
L3	Knee Extension, Hip Adduction
L4	Knee Extension, Ankle Dorsiflexion, Ankle Inversion
L5	Ankle Dorsiflexion, Big Toe Extension, Foot Eversion, Foot Inversion, Hip Abduction
S1	Ankle Plantarflexion, Foot Eversion, Hip Extension
S2	Knee Flexion

Peripheral AT A Motor Innervations GLANCE

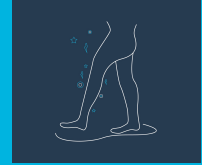


Key Peripheral Motor Innervations with their chief muscle actions including those downstream (in grey)

Femoral	Hip Flexion, Knee Extension
Obturator	Hip Adduction
Sciatic	Knee Flexion, Ankle Plantarflexion, Ankle Dorsiflexion, Foot Inversion, Foot Eversion
Tibial	Ankle Plantarflexion, Foot Inversion, Toe Flexion
Common Peroneal	Ankle Dorsiflexion, Foot Eversion, Toe Extension
Grading Motor Testing - Normal	
Sub-maximal movement against resistance	5
Moderate movement against resistance	4+
Slight movement against resistance	4
Moves against gravity but not resistance	4-
Moves with gravity eliminated	3
Flicker	2
No movement	1
	0

Reflexes AT A

And Grading GLANCE



Reflexes with their nerve root levels and involved peripheral nerves

Reflex	Root Level / Nerve
Patella	L3-L4 / Femoral
Achilles	S1-S2 / Tibial
Biceps	C5-C6 / Musculocutaneous
Brachioradialis	C6 - C7 / Radial
Triceps	C7 - C8 / Radial

Reflex Grading

Absent

Hyporeflexive

Normal

Hyperreflexive

Associated with Clonus/Reflex spread (muscle response away from site of tested reflex)

Nerve AT A Mechanosensitivity Testing GLANCE



Straight Leg Raise

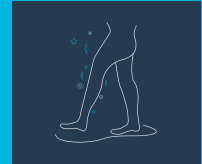
Location of Pain	Structural Differentiation	Positive Test
Low Back	Passive Ankle Dorsiflexion	Reproduction of low back pain
Buttock/Posterior Thigh	Passive Ankle Dorsiflexion	Reproduction of buttock/posterior thigh pain
Calf	Active Neck Flexion	Reproduction of calf pain

Slump Test

Location of Pain	Structural Differentiation	Positive Test
Low Back	Passive Ankle Dorsiflexion	Reproduction of low back pain
Buttock/Posterior Thigh	Passive Ankle Dorsiflexion	Reproduction of buttock/posterior thigh pain
Calf	Neck Flexion > Extension	Alleviation of calf pain

Radicular Pain

+/- Radiculopathy



Presenting Features

Reported:

Leg pain

Numbness

Pins and Needles/tingling

Weakness

Evidence of:

Dermatomal loss of sensation

Myotomal loss of power

Nerve mechanosensitivity

Reflex(es) loss

Demographics

Affects people of all ages but is most commonly seen in those in their forties and fifties

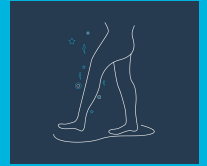
Does the Patient:										Score
Report pins & needles or numbness in the involved lower limb										1
Report pain below the knee										2
Report that their leg pain is worse than their back pain										2
Have a positive Straight Leg Raise and/or Slump Test										3
Have any quantifiable sensation or reflex loss in the involved lower limb										2
TOTAL (add scores)										
Sum Score	0	1	2	3	4	5	6	7	8	9
% Probability	4	9	19	42	63	83	93	96	99	100

Stynes et al 2018

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Claudication

Radicular



Radicular Claudication associated with
Lumbar Spinal Stenosis

Presenting Features

Commonly reported in the leg(s)

Pain (standing and walking-induced)

Pins and needles and/or exertional numbness

Sense of heaviness

Night time cramps

Less Common

Reported weakness in the leg(s)

Quantifiable loss of sensation, power and/or reflex(es)

Nerve mechanosensitivity

Demographics

The average age of onset is between 62 to 69 years.

Radicular Claudication is less common under the age of 50

R Score

11> (see next page)

Onward Referral

Poorly managed or disabling leg pain

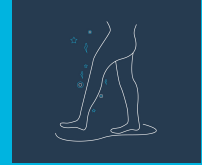
Not improved by reasonable period of Rehabilitation

Investigations

Routine Lumbar MRI - Only if considering surgical decompression

Claudication

Radicular



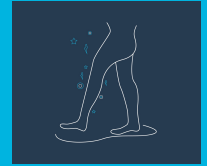
R Score

Genevey 2018

Attribute	Score
Age >60	4
Positive 30 second extension test	4
Patient reports pain in both legs	3
Patient reports pain relieved with sitting	3
Patient reports leg pain decreased by leaning forwards or flexing the spine	3
Negative Straight Leg Raise	2
TOTAL (add scores)	

To calculate R score, add the total score of all 6 attributes (The total will range from 0 to 19)
>11 is highly likely to have Radicular Claudication associated with Lumbar Spine Stenosis (Specificity 92.1%, sensitivity 80.0%)

Myelopathy



Presenting Features

Reported:

Unsteadiness on feet

Falls

Issues with fine dexterity e.g. doing up buttons

Weakness in arms and/or legs

Spinal pain and/or stiffness

Comorbidities

Spinal surgery

Cervical Spinal Stenosis

Assessment Findings

Age >45
Positive Hoffmans Sign
Positive Inverted Brachioradialis Sign
Positive Babinski Sign
Gait disturbance

Cook et al Myelopathy cluster 2010

Myelopathy



Additional Assessment Findings

Quantifiable loss of muscle power: Finger Extension, Elbow Extension and/or Shoulder Abduction

Quantifiable loss of muscle power: Hip Flexion, Knee Flexion and/or Ankle Dorsiflexion

Hyperreflexia/Clonus/Reflex spread

Positive Lhermitte sign

Investigations

Urgent whole spine MRI

Onward Referral

All suspected cases of Myelopathy should be onwardly referred to spinal/ortho services

Urgent Referral Considerations

The 3 P's of Radiculopathy

Profound - sensory or muscle power loss e.g., oxford score <3

Progressive - sensory or muscle power loss

Poly-root - sensory or muscle power loss over more than one dermatome/myotome

Resources

For More Information

Jenson et al 2019 BMJ Diagnosis and treatment of Sciatica

Jenson et al 2021 BMJ Lumbar Spinal Stenosis

Cook et al 2010 Journal of Manual and Manipulative Therapy Clustered clinical findings for diagnosis of cervical spine myelopathy

Adam Dobson

Adam works as a Specialist Triage & Treat Spinal Physiotherapist for South Tees Hospitals NHS Foundation Trust. He has a special interest in rehabilitation and all things Radicular Syndromes.

Follow Adam on Twitter @adamdobson123 for more links, resources and current developments in this area of MSK practice.

More At A Glance

Rheumatology At A Glance

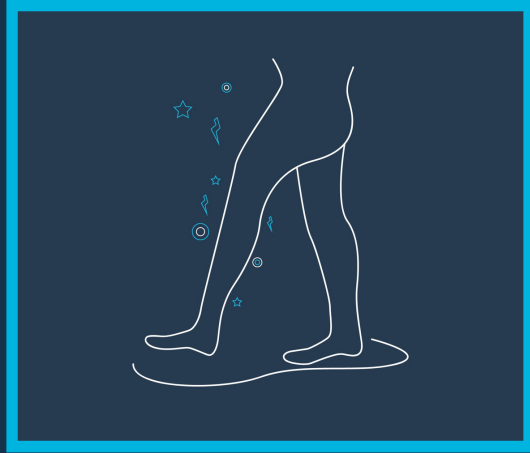
Spinal Masqueraders At A Glance

The Hip At A Glance

The Hand At A Glance

Find them at <https://rheumatology.physio>

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RHEUMATOLOGY.PHYSIO

ONLINE.

With many thanks to the following:

*Felicity Thow and Jack Chew
(creative design)*

Adam Dobson - Images

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