

Occupational Therapy Driving Assessments


Lyndell Bambridge
Occupational Therapist
Calvary Driving Program

NSW Physios in Amputee Rehab
Bankstown Hospital
27th July 2018

How do I return to driving following a lower limb amputation?



Overview

- ▶ Overview of the requirements of driving
 - ▶ Understanding of the legislation regarding medical fitness to drive
 - ▶ Overview of the Occupational Therapy driver assessment process.
 - ▶ Awareness of the various vehicle modifications
 - ▶ Understand the process required in returning to driving with vehicle modifications
 - ▶ Case study – returning to driving following a lower limb amputation
- 

Driving

- ▶ Driving is so important in current society it is considered an activity of daily living.
 - equals independence
 - facilitates access to work and the community
 - people identify themselves through the roles that they play as a driver
 - driving cessation can lead to depression and social isolation
- ▶ Driving is a privilege not a right
 - we must all be able to demonstrate competence
 - we must all comply with licensing standards



Factors that can effect driving

- Vision
- Cognitive and perceptual function
- Physical function



Physical function

▶ Lower limb function

- Adequate **lower limb** strength, coordination, ROM and sensation to operate foot pedals.
- The RMS considers the loss of toes a minor disability.
- The loss or serious impairment of one or both legs is considered as serious disability.

Who sets the licensing standards?



Legislation

- ▶ The Driver Licensing Authority (DLA) determine all licensing standards
 - DLA are responsible for issuing, renewing, suspending or cancelling a person's licence
 - In NSW the DLA is the Roads and Maritime Services (RMS)
 - In determining medical fitness to drive the DLA, driver and health professional have clearly defined roles.

Medical conditions

- ▶ any permanent or long term injury or illness that may affect safe driving ability must be reported to the DLA
- ▶ Who is responsible for reporting a medical condition to the DLA?

Reporting a medical condition

- ▶ In NSW the driver is responsible for reporting a medical condition to the RMS
- “In all states, excluding SA and NT, legislation requires a driver to advise their DLA of any permanent or long term injury or illness that may affect his or her safe driving ability”
- “These laws can impose penalties for failure to report”

Roads and Transport (Driver Licensing) Regulation, 1999



Reporting medical conditions


▶ **Learner driver**

- If a first time driver has a medical condition that may affect driving ability they must declare this medical condition on their licence application form
- Must submit a “NSW Fitness to Drive Medical Assessment” report
- Licence will be endorsed with any conditions for example vehicle modifications/need for an OT driving assessment/may only drive with a licensed driving instructor

▶ **Current licence holder with a serious disability**

- Must report any medical condition likely to impact on driving safety to the RMS
- Must submit a completed medical assessment report
- Licence will be endorsed with appropriate conditions

Roles and Responsibilities – Health Professional

- ▶ Assess medical fitness
 - ▶ Advise the person regarding their medical condition and their ability to drive
 - ▶ Advise the **driver of their responsibility** to report to the DLA their medical condition
 - ▶ **Report** to the DLA regarding a person's fitness to drive in accordance with legislated requirements and public safety considerations
 - ▶ Make an assessment and provide advice to the DLA regarding a patient
- 

Is it mandatory for health professionals to report a person's medical condition to the DLA?

- ▶ There is no mandatory reporting requirements for practitioners in NSW

HOWEVER

- ▶ With respect to medical fitness to drive there are on occasions justifiable reasons for breaching confidentiality and reporting directly to the RMS

When to report

- ▶ Where the person is unable to appreciate the impact of their condition
- ▶ take notice of recommendations due to cognitive impairment, or
- ▶ continues to drive despite recommendations and is likely to endanger the public

The health professional should consider reporting to the DLA



Legislation and Guidelines: Reporting by health professionals

“An individual **does not** incur civil or criminal liability for **carrying out tests or examination** in accordance with the regulations under the Road and Transport (Driver Licensing Act) 1998 and expressing to the Authority in good faith an opinion as a result of carried out test or examination”

- Roads and Transport (Driver Licensing) Act: 1998 Road Transport General Act 1999: Road Transport (Driver Licensing) Regulation 1999

Legislation and Guidelines: Reporting by health professionals

“An individual **does not** incur civil or criminal liability for **reporting** to the Authority, in good faith, **information** that discloses or suggests that another person is or may be **unfit to drive** or that it may be dangerous to allow another person to hold, to be issued or to have renewed, a driver’s licence or a variation of a driver’s licence”

- Road Transport(Driver Licensing) Act: 1998 Road Transport General Act: 1999: Road Transport (Driver Licensing) Regulation 1999

Medical standards

- ▶ Austroads “Assessing Fitness to Drive” (2016)

Electronic version available to download on www.austroads.com.au



Assessing Fitness to Drive
for commercial and private vehicle drivers



Musculoskeletal conditions

▶ Medical standards for licensing:

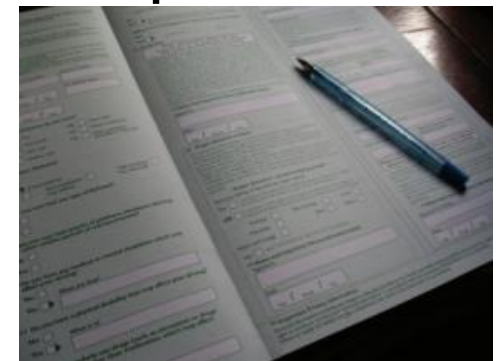
- A person is not fit to hold an unconditional license:
 - If the driver's ability to perform the required driving activities is inadequate
- A conditional license may be considered by the driver licensing authority subject to periodic review, taking into account:
 - The nature of the driving task
 - Information provided by the treating doctor on the benefits of treatment, prostheses or other devices
 - A practical driver assessment if required and
 - Any modifications to the vehicle

Practical driver assessment

- ▶ The DLA “recognises that evaluation of the effectiveness of prostheses and the specification of appropriate vehicle controls is a **specialist area**”.
- ▶ It recommends “that the person be referred to an **occupational therapist specialising** in the area and that the report from that professional is to be made available to the driver licensing authority”.

Returning to driving following a lower limb amputation

- ▶ The driver must inform the RMS of their lower limb amputation
 - This is a permanent injury that may impact on driving safety
 - Left and right lower limb must be reported, even if left lower limb and driving an automatic vehicle
- ▶ The RMS will request the person submits an “NSW Fitness to Drive Medical Assessment” report



Returning to driving following a lower limb amputation

- ▶ The Fitness to Drive Medical assessment report is completed by the persons treating doctor
 - If returning to driving with a left lower limb amputation and wanting to driving only an automatic vehicle the doctor can indicate
 - **Option 4:** Meets the medical criteria for a conditional licence, subject to periodic medical review (indicate restrictions below id appropriate)
 - **If option 4 ticked: What are the recommended licence conditions?** Tick box modified vehicle. Specify: **automatic vehicle only**

Returning to driving following a lower limb amputation

- ▶ If returning to driving following a right lower limb amputation, left lower limb amputation and wanting to drive a manual vehicle or bilateral lower limb amputation, doctor to complete medical assessment form and recommend the following
 - **Option 3:** Meets the medical criteria subject to further assessment (practical driving test or specialist medical review)
 - **If option 3 ticked: Which assessment is recommended?**
Occupational therapist driving assessment

Occupational Therapy Driver Assessment

- Aims to determine if a person's medical condition impacts on their ability to drive
 - Determines the need for vehicle modifications
 - Determines if a person has the capacity to learn to drive
- Condition related vs. what is a driver habit
- Widespread national and international agreement the on road driving assessment is the “gold standard” for driving assessment.



Referral to an Occupational Therapy Driver Assessment

- ▶ Medical form to indicate “fit” to drive –requires an OT driver assessment
- ▶ Client is notified of referral
- ▶ Medical is forwarded to the RMS Medical Unit
- ▶ Licence downgraded to learners licence and restricted to driving with driving instructor only



Occupational therapy driving assessment

- ▶ Medical referral
- ▶ Eligible for an active licence
- ▶ Waiting list
- ▶ cost
- ▶ 3 hour assessment
 - Off road assessment – 1 ½ hours
 - On road assessment – 1 hour
 - Feedback session – 30 minutes



Off road assessment



- ▶ Off road component:
 - Interview
 - Physical assessment
 - Vision screen
 - Cognitive assessment

- ▶ Aim
 - Identify possible deficits requiring assessment on road
 - Appropriate route
 - Need for vehicle modifications
 - Controlled vs self directed testing

On road assessment

- ▶ Completed by the OT and driving instructor
- ▶ Dual controlled vehicle
- ▶ Vehicle modifications installed in assessment vehicle

- ▶ **Assesses**
 - Observation
 - Speed control
 - Physical control
 - Reaction time
 - Vehicle positioning
 - Planning and judgement



When a person requires vehicle modifications:

- ▶ Any vehicle modification must be endorsed on a licence.
- ▶ To have a modification endorsed you are required to undertake an RMS Disability Test
- ▶ Not all RMS/Services NSW's registries conduct RMS Disability Tests
- ▶ If wearing a prosthesis when driving this is considered a vehicle modification and must be endorsed on the licence.
- ▶ If driving with the left foot to operate standard brake and accelerator pedals the RMS requires a driver to undertake an RMS Disability Driving Test
- ▶ All vehicle modifications must be done by certified vehicle modifier...compliance certificate issued to RMS

Modifications for lower limb amputees

- ▶ The type of modification depends on:
 - Left or right lower limb
 - Automatic vs manual vehicle

Left lower limb amputation

▶ Automatic vehicle

- No vehicle modifications required, licence endorsement may only drive automatic vehicles.
- No RMS driving test required but must have medical report indicating fitness to drive with the above mentioned condition

▶ Manual vehicle

- Control the clutch using the prosthesis
- Duck clutch
 - Both techniques are vehicle modifications. Must undertake an RMS Disability Test and have the condition endorsed on the licence

Operating the clutch using a prosthesis

duck clutch



Right lower limb amputation

▶ Automatic

- **Prosthesis to control brake and accelerator pedal**
 - Considered vehicle modification
 - Must undertake an RMS Disability Test with the condition endorsed on the licence
- Influencing factors include:
 - Age at time of amputation
 - Number of years since amputation
 - Sound sense of the position of the foot
 - Amputation level – more likely if below knee
 - Presence of other complicating medical factors – trauma/tumor vs peripheral vascular disease
 - Confidence in prosthesis fit

Right lower limb amputation

▶ Automatic

- Left leg to operate standard brake and accelerator pedal
 - Must undertake an RMS Disability Test to demonstrate safe pedal control
 - Long term implications lower back pain due to sitting posture/rotating hip. Difficulty performing observation checks, need good trunk and neck movement.

Right lower limb amputation

▶ Automatic

◦ Left foot accelerator

- Vehicle modification, must undertake RMS Disability Test and have the condition endorsed on the licence
- Right accelerator flips up and left flips down
- Must be installed by an approved vehicle modification and have an RMS compliance certificate
- Normally 6–10 hours driving lessons
- Cost – approximately \$1100



Bilateral lower limb amputee

- ▶ Varying types of hand control options now available
 - Vehicle modification condition must be endorsed on licence
 - Must undertake an RMS Disability Test
 - All modifications must be installed by a vehicle modifier and have a compliance certificate

Modifications

- ▶ Push pull hand controls
 - Push to brake pull to accelerate
 - Need steering wheel aid
 - Electronic indicators are on the hand controls
 - Cost is approximately \$3000-\$4000



Modifications

- ▶ Accelerator over ring
 - Accelerate pushing on ring, brake with a lever next to steering wheel
 - Cost approximately \$7000
 - over ring accelerator



Modifications

- ▶ Satellite hand accelerator
 - Cost between \$5000–\$7000
 - Only new to the market. Italian brand
 - Lever brake pedal
 - [satellite hand control](#)



Modifications

- ▶ Spyder
- ▶ Available through Problem Management Engineering
 - Unique Y stance transmission
 - Brake system is operated by using a single foot brake
 - Custom design to suit anyone





Case study – Nathan

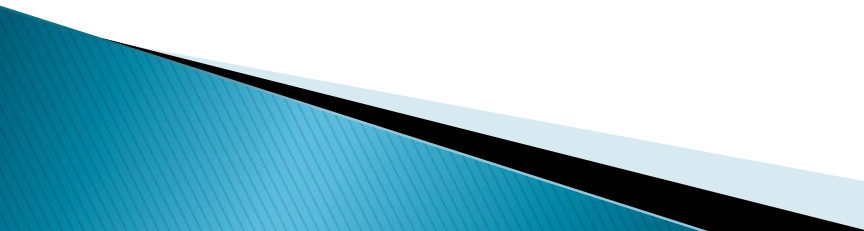
- ▶ 18 year old gentleman
 - Right below knee amputation at age 9 due to neurofibromatosis.
- ▶ Apprentice mechanic – work duties include moving vehicles, both automatic and manual in the car yard and on the street
- ▶ Learner driver, no previous driving experience
 - a class C learner's licence with the endorsement **must drive with a licensed driving instructor only.**
- ▶ Physical assessment:
 - Full AROM in right hip and knee movement patterns
 - Strength 5/5 (oxford scale)
 - Sustained endurance within normal limits
 - Nil abnormalities detected in proprioception and coordination
 - Nil phantom limb pain
 - Prosthesis well fitted.

Case study – Nathan

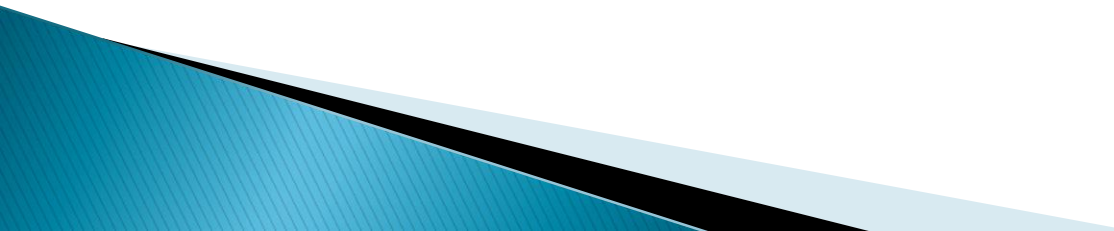
- ▶ What are the issues for Nathan?

Case study – Nathan

▶ Outcome:

- Maintain class C learners licence
 - Removal of licence endorsement must drive with a license driving instructor
 - Licence to be endorsed with – D099 must wear artificial right leg
 - Must complete RMS Disability Test once competency in driving performance is achieved and after completing the required log book hours
- 

Case study – John

- ▶ 64 year old gentleman
 - ▶ Right below knee amputation secondary to bacterial sepsis in the right foot.
 - ▶ HR licence. Owns and operates a truck driving business.
 - ▶ Needs to drive a variety of manual and automatic vehicles for work purposes
 - ▶ Does not want to return to truck driving
 - ▶ Returned to driving unaware of licencing requirements. Drive with the left foot on the brake and accelerator, standard automatic vehicle.
 - ▶ Prosthesis not well fitted as yet. Slips off when driving. Not confident to drive using prosthesis.
- 

Case study – John

- ▶ **What are the issues for John?**

Case study – John

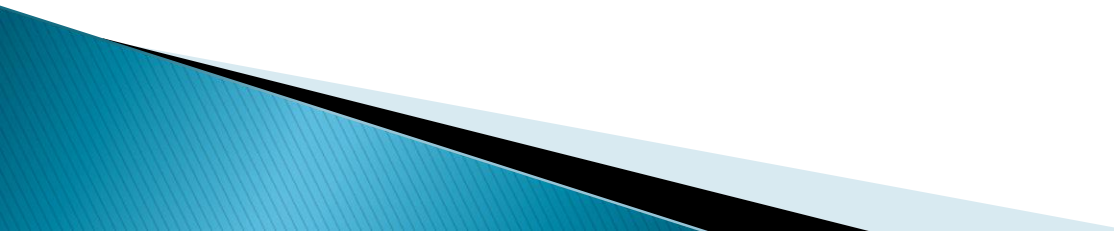
▶ Outcome:

- Drove safely using the left foot on the brake and accelerator pedals, using standard foot pedals.
- High risk of developing lower back pain driving using this foot pedal technique.
- Encouraged to learn to drive using left foot accelerator. Client may be considered in 2–3 years when retired from work
- Class C licence with endorsement must drive automatic vehicles only – **required to undertake an RMS Disability Test to demonstrate competency driving using this technique.**
- Would require a HR occupational therapy driver test to maintain HR licence. Client did not want to pursue a return to driving trucks.
- Client aware of the licensing procedures to learn to drive with a left foot accelerator.

Case study – Laura

- ▶ 23 year old lady with right thigh sarcoma excision resulting in rectus femoris, vastus medialis, vastus intermedius, most of vastus lateralis, femoral nerve, lateral cutaneous nerve and saphenous nerve excision.
- ▶ Nil active knee extension. Reduced hip strength and ROM for hip flexors, nil sensation thigh, knee, medial aspect calf and foot
- ▶ Requires use of leg orthosis for knee extension
- ▶ learner diver, nil pervious driving experience

Case study – Laura

- ▶ Not able to use right lower limb to operate foot pedals.
 - ▶ Must learn to drive with vehicle modifications – left foot accelerator
 - ▶ Learner driver – did not previously drive with right foot so not at risk of confusing pedals. Recommend removal of licence condition may only drive with a licensed driving instructor.,
 - ▶ Must undertake RMS Disability Test once competency in driving is achieved and completed log book hours.
 - ▶ Vehicle must be modified by a authorised vehicle modifier.
- 

Questions



- ▶ Contact details:

Lyndell Bambridge
Occupational Therapist
Calvary Driving Program
Calvary Health Care Sydney
Ph: 9553 3000

lyndell.bambridge@health.nsw.gov.au