

Can we improve physiotherapist's knowledge about managing children with Spina Bifida through online learning?

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Spina Bifida in Queensland



- 104 children live in regional areas + Northern NSW
- 123 children live in Brisbane Metropolitan area

Aims

- To provide physiotherapists with evidence based information and guidelines to manage children with Spina Bifida from birth to adolescence and beyond.
- To improve physiotherapy access for children with spina bifida particularly in rural/remote areas



Why eLearning?

- Rapid dissemination and ease of access
- Self-paced learning
- Free of charge
- Interactive design
- Regular reviews and updates



Course content

- Introduction
- Central nervous system anomalies
- Monitoring for neurological stability
- Gait and ambulation in Spina Bifida
- Associated health issues in Spina Bifida



Module 2 - Central Nervous System Anomalies - Syringohydromyelia

Introduction to syringohydromyelia

A syringohydromyelia, or syrinx, is an accumulation of CSF in a cavity within the spinal canal, caused by altered CSF circulation. A communicating syrinx is one that has been, or is continuous with, the fourth ventricle (Williams 1979). It is typically seen in conjunction with an Arnold-Chiari Malformation. A non-communicating syrinx has no functioning communication with the fourth ventricle, and may be present in patients with a normal posterior fossa. A non-communicating syrinx may originate from a tumour or trauma to the cord.

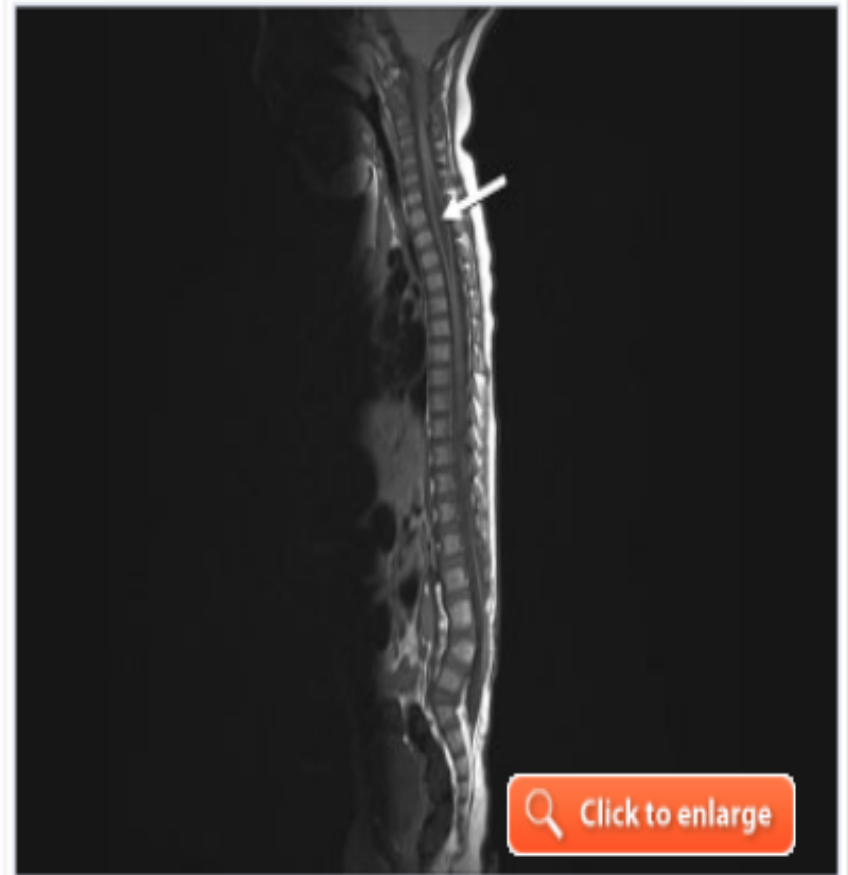


Figure 2.5. MRI showing an ACM II and a cervicothoracic syrinx.

Press the **Play** button to watch the video below.



Watch this video, demonstrating manual muscle testing in Gillian, a child with spina bifida.

Press the **Play** button to watch the video below.



Watch this video, demonstrating manual muscle testing in Michael, a child with spina bifida.



[Click to download Gillian's MMT.](#)



[Click to download Michael's PT Assessment.](#)



[Click to download Gillian's PT assessment.](#)



[Click to download Michael's MMT.](#)

Choose a video clip below. Try to describe the gait pattern that you are seeing. How does this gait pattern relate to the underlying muscle strength? Can you determine which muscles are active, and which muscles are weak or paralysed? Consider how this may relate to an approximate level of spinal lesion (e.g., sacral, low lumbar, mid lumbar).

*Press the **Play** button to watch the video below.*



Case study Bree

*Press the **Play** button to watch the video below.*



Case study Duncan



Click to download Bree's MMT.



Click to download Duncan's MMT.

Children and adults with MMC and impaired mobility have reduced bone mineral density (BMD) and a higher incidence of lower limb fractures than the general population (Dosa *et al* 2007, Marrieros 2010). This is likely due to the lack of weight bearing, physical activity, and muscle pull that help to stimulate bone growth. Not surprisingly, children who ambulate full-time appear to have significantly better BMD than children who use a wheelchair full-time (Apkon *et al* 2009, Ausili *et al* 2008).

Although some authors suggest that weight bearing and ambulation in children with MMC may reduce the risk of fracture (Mazur *et al* 1989, Stuberg 1992, Thompson *et al* 2000), this has not been conclusively established. Further research is required to determine not only the effect that weight bearing and ambulation have on preventing fractures, but also the intensity and duration required to have positive effects.



Figure 5.6. Pathological femoral fracture in a 13-year-old with thoracic level paralysis.

Case example

Question:

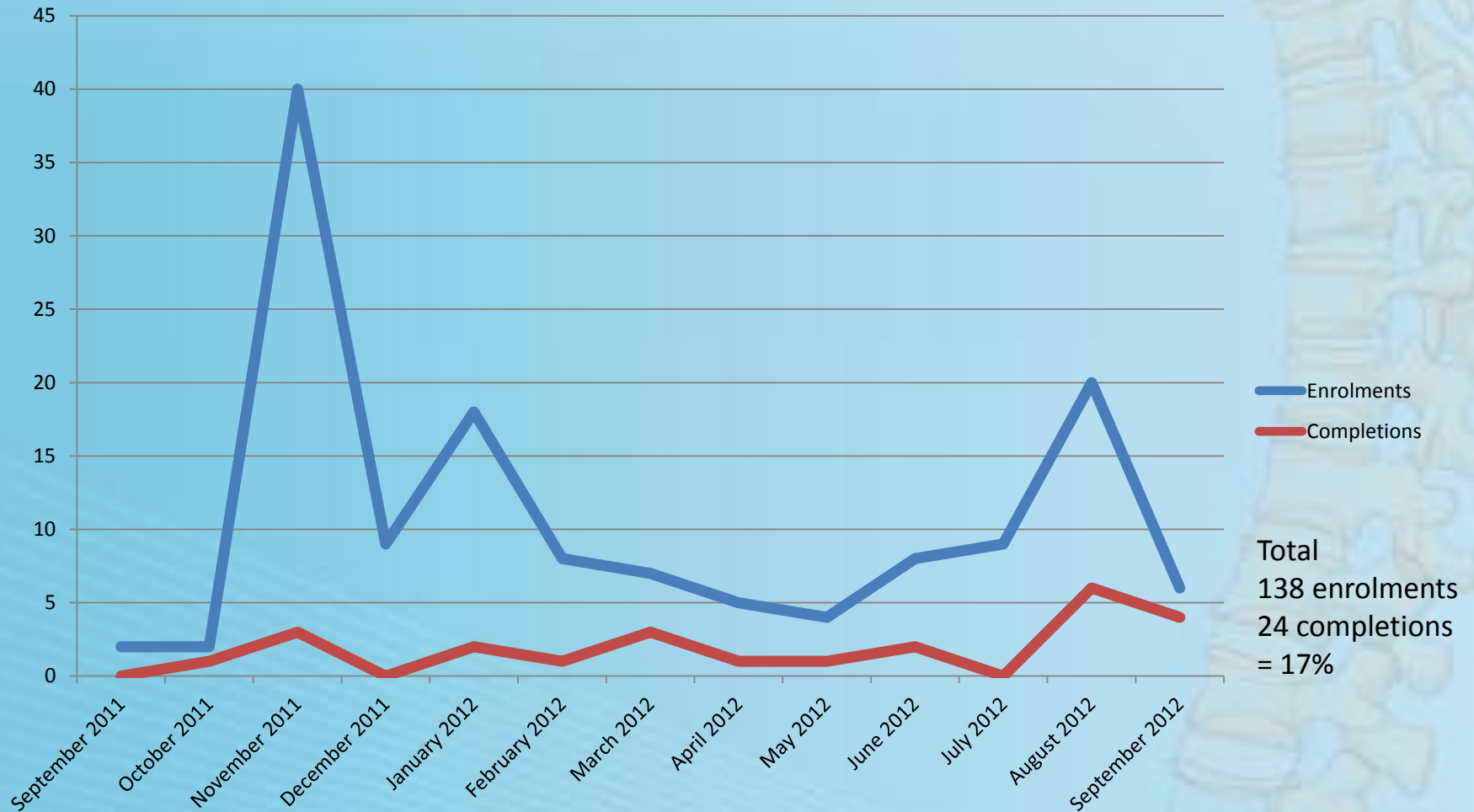
Joel is a 15-year-old boy with a high lumbar MMC, ACM II, and unshunted hydrocephalus. He walked in an RGO when he was younger but has not ambulated for the past four years. He is very active in his wheelchair and is independent in all transfers. During your assessment, you notice that Joel's right knee is swollen and red. On palpation, you note that it feels warmer than the other side. His knee is not painful and he does not recall any falls or injuries. What could be the significance of this, and what would be your management plan?

Assessment and evaluation

- Pre and post self efficacy
- Self assessment through
 - Case examples
 - Case studies



Enrolments and course completion



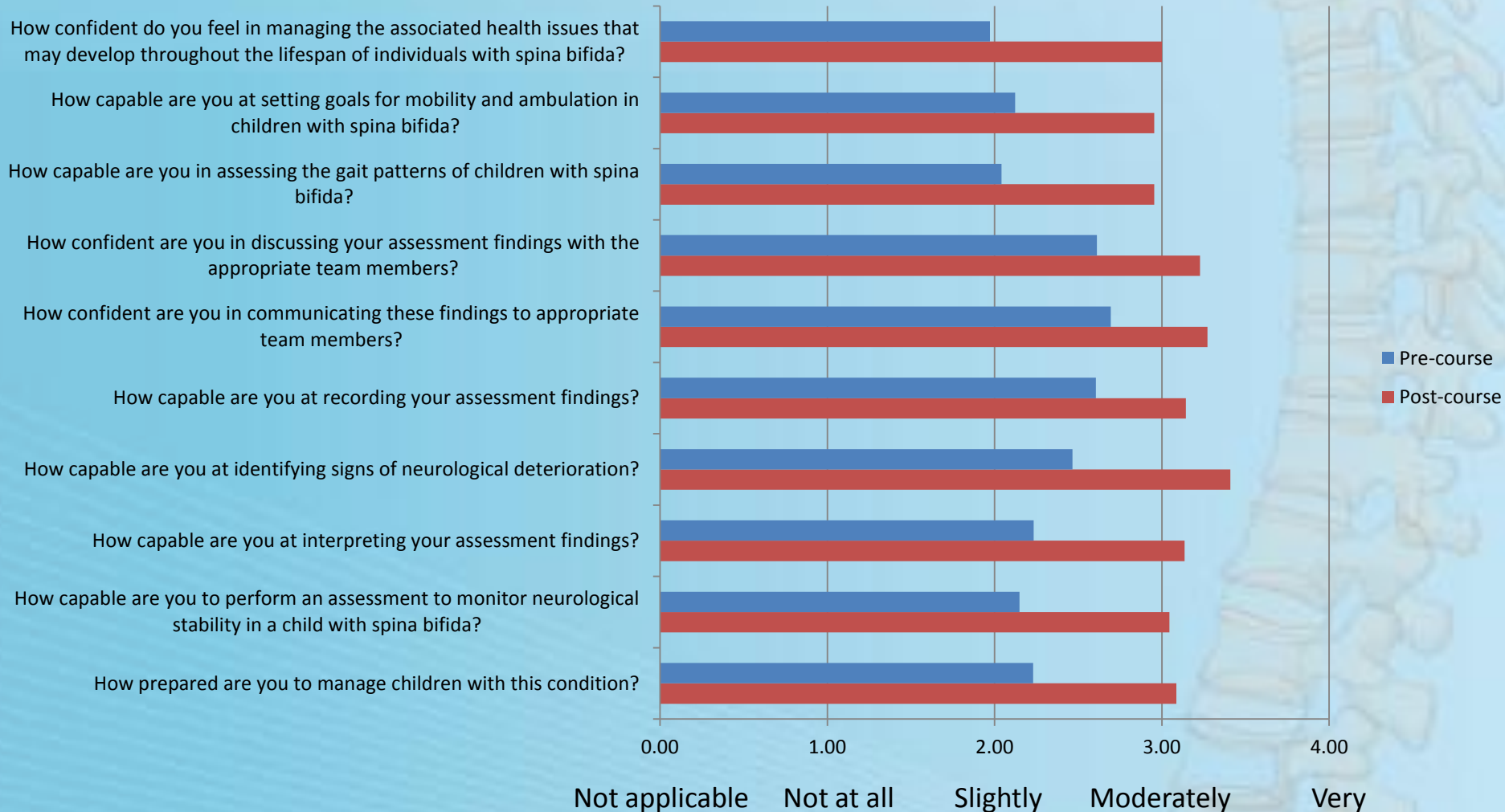
Why the low completion rate?

- Time constraints
 - Workplace
 - Home / personal time
- Lack of personal discipline
- Unfamiliarity with computers

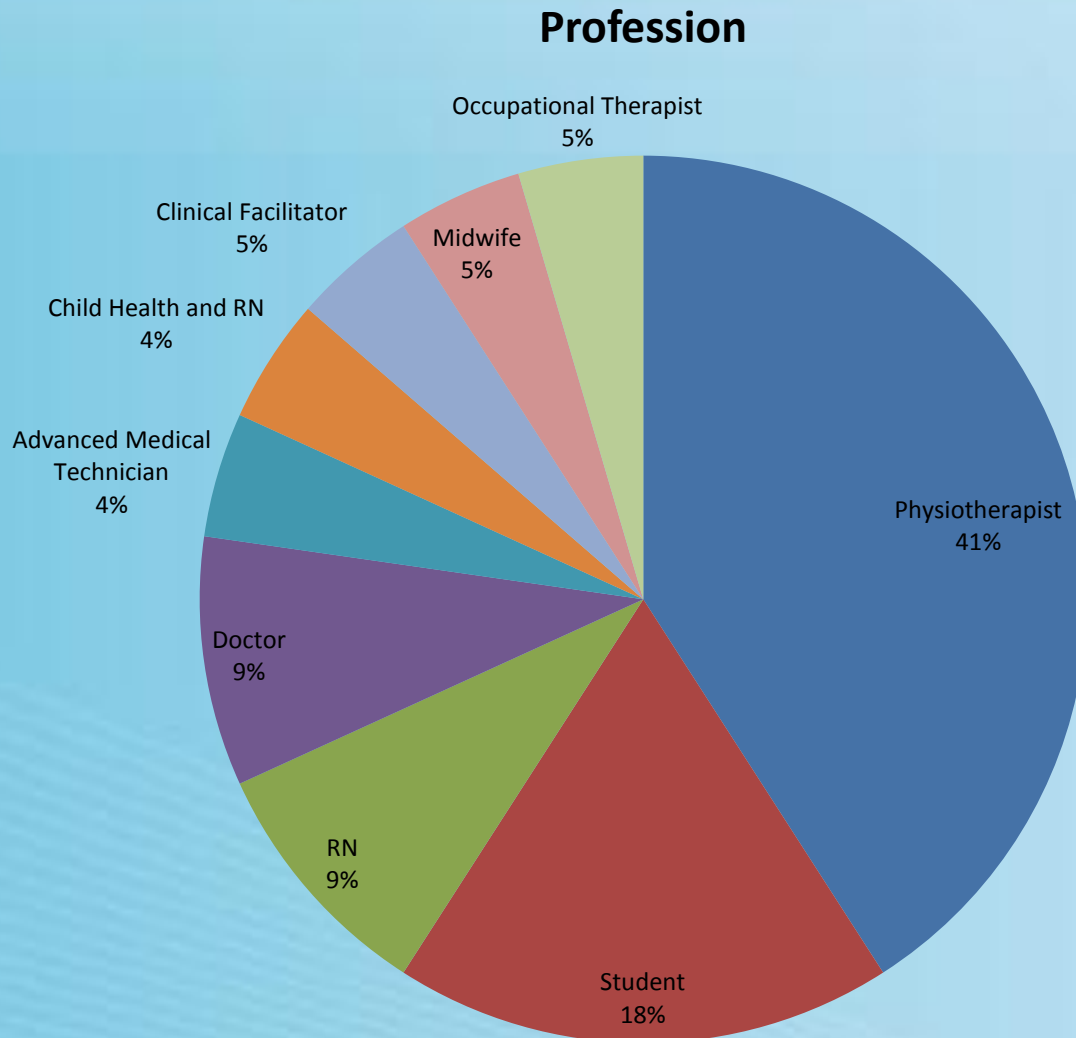
Gagnon *et al.* Inform Prim Care
2007;15(2):83-91

- Self efficacy not completed
- Relatively high numbers of non physiotherapists

Course Evaluation



Who is enrolling?



Where to from here?

- Future updates
- Further evaluation and follow up
- Workshops
- Additional Modules



Special Thanks

- RCH Foundation
- CSDS eLearning Team
- Course reviewers

