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Physiotherapy management of patients undergoing lumbar spinal surgery: a survey of Australian physiotherapists

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Background

- Physiotherapists are commonly involved in the management of patients immediately before and after spinal surgery in UK hospitals
- The focus of peri-operative physiotherapy is typically on:
 - provision of information related to the surgery
 - ensuring patient readiness for safe discharge
- There is a high level of variability in the:
 - timing of intervention
 - number of sessions with a physiotherapist
 - the specific interventions provided

Rushton et al. 2014, Williamson et al. 2007

Background

- Increasing evidence that rehabilitation interventions commenced four to six weeks following surgery improve patient outcomes (Oosterhuis et al. 2014)
- Limited research in the immediate post-operative period
- Physiotherapeutic interventions before and after surgery for degenerative lumbar conditions: a systematic review (Gilmore et al. 2013)
 - Four studies identified
 - Limited scope of physiotherapy care
 - Very low quality evidence to suggest physiotherapy may improve pain and function following lumbar surgery
 - Limited guidance for physiotherapy practice

Background

- Rates and associated costs of spinal surgery are rapidly increasing
- Increasingly important for rehabilitation interventions to be evidence based:
 - Clinically effective interventions
 - Cost effective interventions
- Little known about physiotherapy services provided to patients undergoing spinal surgery in Australian hospitals:
 - Routine provision of pre and post-operative physiotherapy
 - Specific interventions provided
- Future research must be focused on physiotherapy goals and interventions commonly provided in the clinical setting - an understanding of current physiotherapy practice within Australian hospitals is required

Research aims

To establish the current peri-operative physiotherapy management of adults undergoing lumbar spinal surgery in Australia.

Research questions:

- a) What constitutes current physiotherapy practice in the pre-operative and post-operative inpatient setting, for the management of adults undergoing lumbar spinal surgery in Australia?
- b) Is there variation in physiotherapy practice between the different types of lumbar surgery?
- c) How do individual surgeon's protocols and preferences influence current physiotherapy practice?
- d) How prevalent is the use of standardized outcome measures, and which measures are most commonly used?

Design

- Telephone survey (20-30 minutes)
- Structured questionnaire
- Direct closed ended questions with pre-determined response categories
- Designed to gain a broad, descriptive overview of physiotherapy interventions
- All surveys completed by a single interviewer
- Carried out between August and December 2013

Design

- General information
- Physiotherapy intervention
 - Provision of physiotherapy service
 - Timing and frequency of physiotherapy
 - Advice and education
 - Mobility and functional tasks
 - Exercise
 - Physiotherapy following discharge from the acute setting
 - Outcome measurement
- Variation based on:
 - Surgical procedure
 - Surgeon preferences

Participants

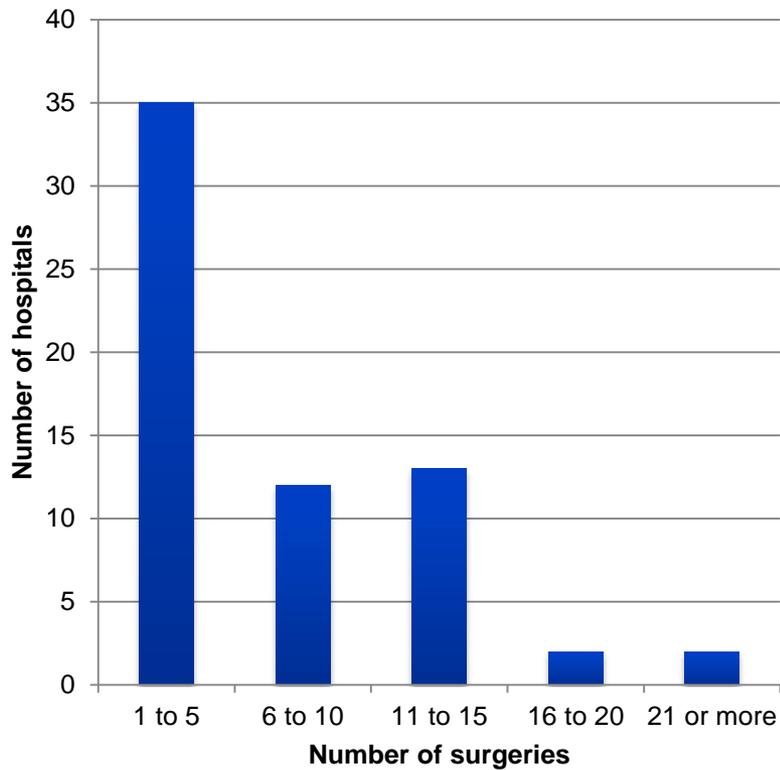
- All Australian hospitals that admit one or more patients per week for lumbar spinal surgery were invited to take part in the survey
- Carried out with the senior physiotherapist responsible for the management of patients undergoing lumbar spinal surgery

Results: Participants

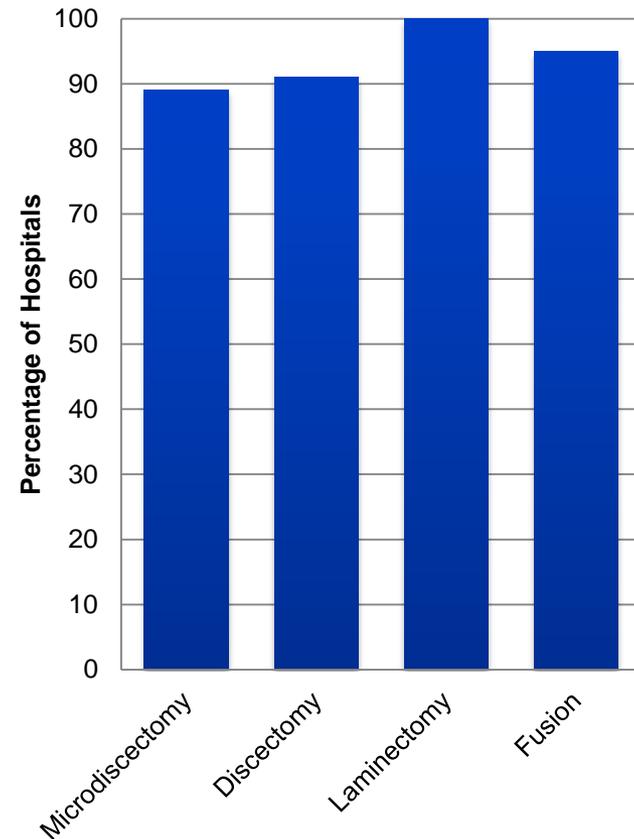
- 79% response rate (64/81)
 - Responders: 48% publicly funded
 - Non-responders: 18% publicly funded
- Physiotherapist data:
 - Female: 64%
 - Physiotherapy experience: 12 years (range 3-40)
 - Experience with lumbar spinal surgery: 8 years (range 1-25)
- Hospital data:
 - Internal physiotherapy service: 81%
 - External physiotherapy service: 19%
 - More than one spinal surgeon: 84%

Surgical Procedures:

Number of lumbar surgeries (weekly)

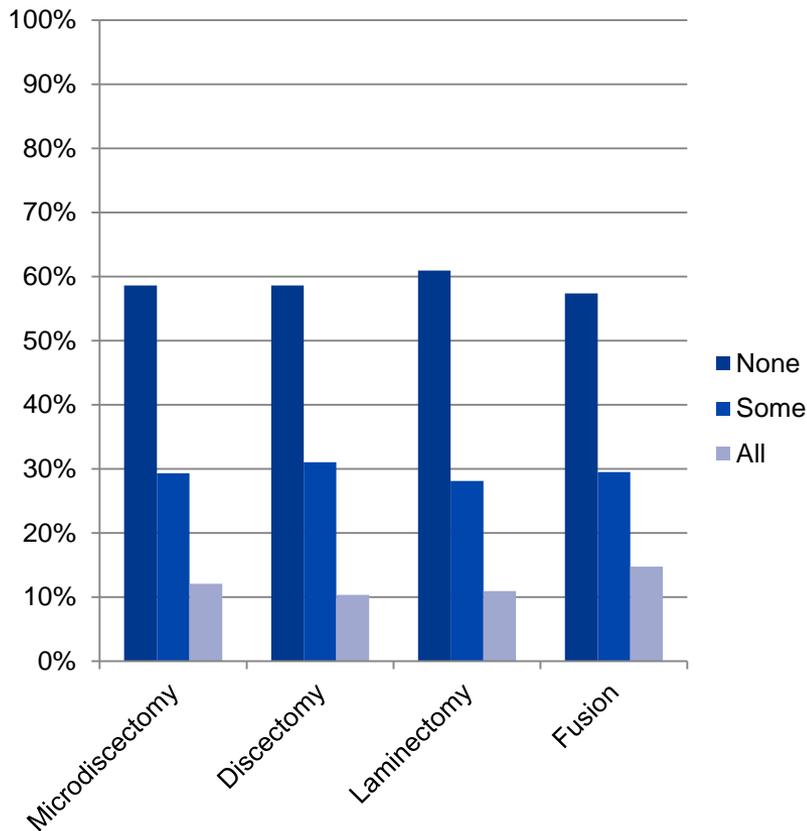


Surgical Procedures

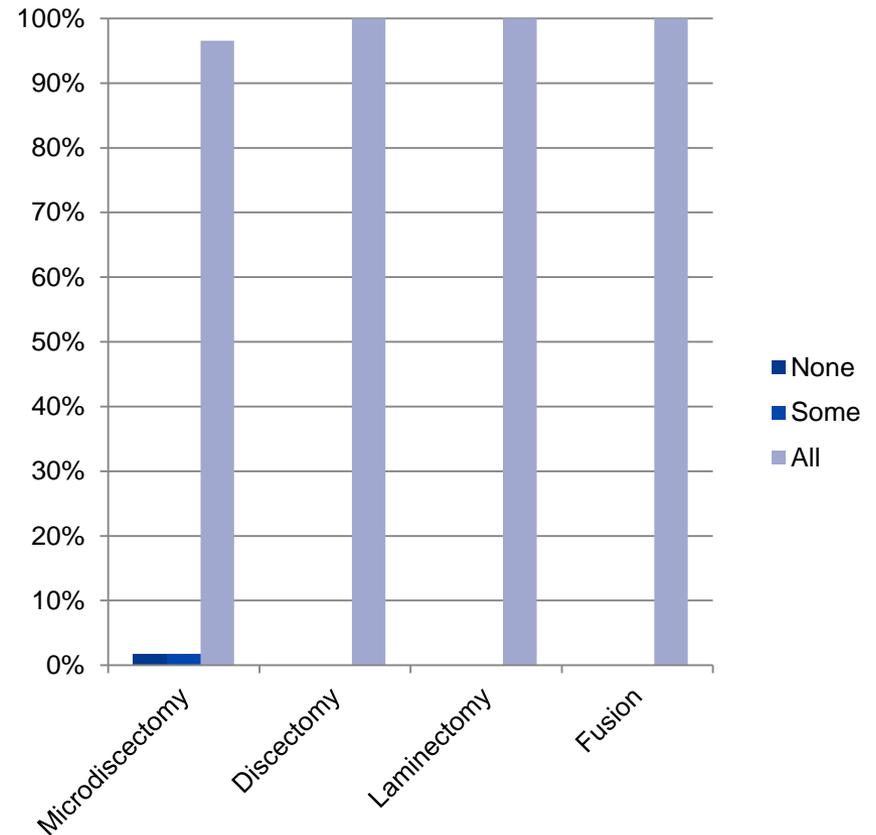


Provision of physiotherapy service

Pre-operative Physiotherapy

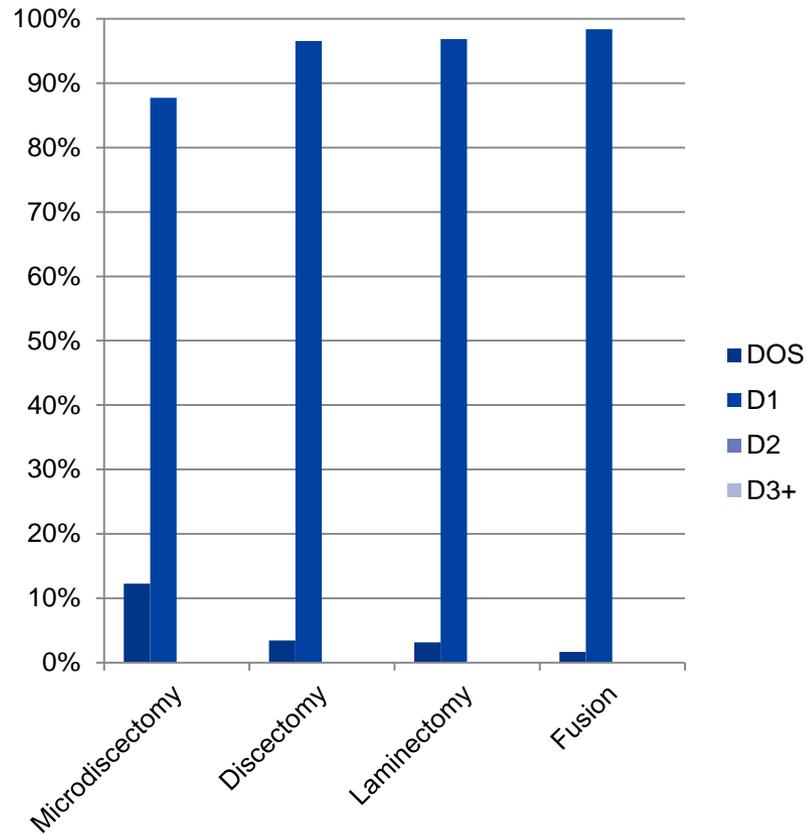


Post-operative Physiotherapy

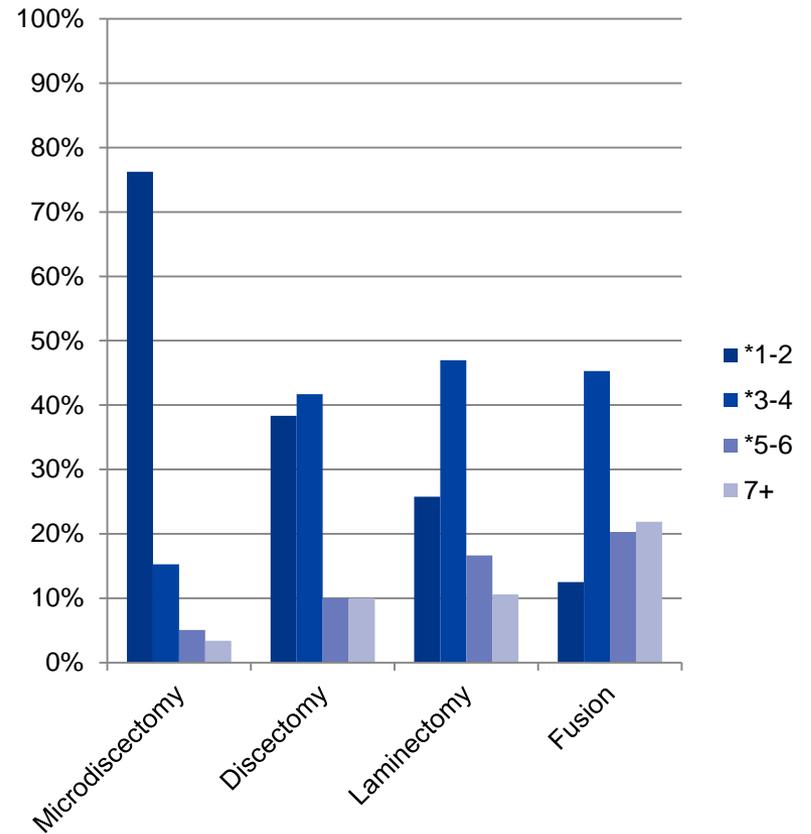


Timing and frequency

Initial contact (post-op)



Total number of treatments



Physiotherapy intervention

Pre-operative:

- Focus on patient education
- Mobility assessment: 36%
- Demonstration of post-operative exercise program: 12%
- No pre-operative exercise/rehabilitation programs

Physiotherapy intervention

Post-operative:

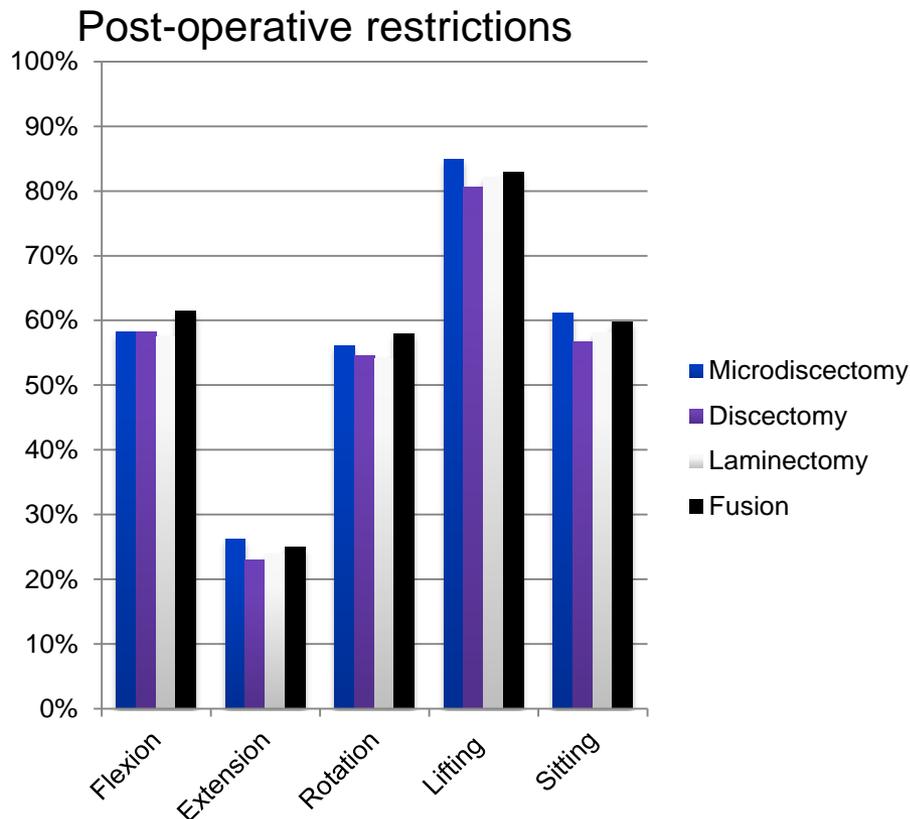
- Mobility and functional tasks
- Advice and education
- Exercise
- Physiotherapy following discharge from the acute setting
- Outcome measurement

Mobility and functional tasks

- Bed transfers: 100%
- Chair transfers: 100%
- Ambulation/gait: 100%
- Stairs: 86%
- On and off the floor: 5%
- Picking objects off the floor: 5%
- Toilet transfers: 3%
- Outdoor ambulation: 2%

Advice and education

85% of participants provided patients with a written handout



- Lifting – mean weight limit: 2.7kg (0.5-5kg)
- Sitting – mean time limit: 25mins (0-60mins)
- Restrictions most commonly in place for between 6 - 8 weeks

Exercise

- 88% of participants prescribed an exercise program
- 56 different exercises described
- Grouped into seven categories:
 - Core stability: 89%
 - Circulation exercises: 45%
 - Strengthening exercises: 45%
 - Spinal ROM: 39%
 - Neural mobilisation: 18%
 - Respiratory exercises: 18%
 - Stretches: 5%

Exercise

Most common exercises:

- TA activation in crook lie/supine 89%
- Lumbar rotation in crook lie 32%
- Supine hip flexion 20%
- Mini-squats 20%
- Standing heel raises 18%
- Pelvic tilt in supine 16%
- Pelvic floor activation 16%

- Ankle pumps 45%
- Static quads 34%
- Hip/knee flexion 11%
- Deep breathing 20%

Outcome measurement

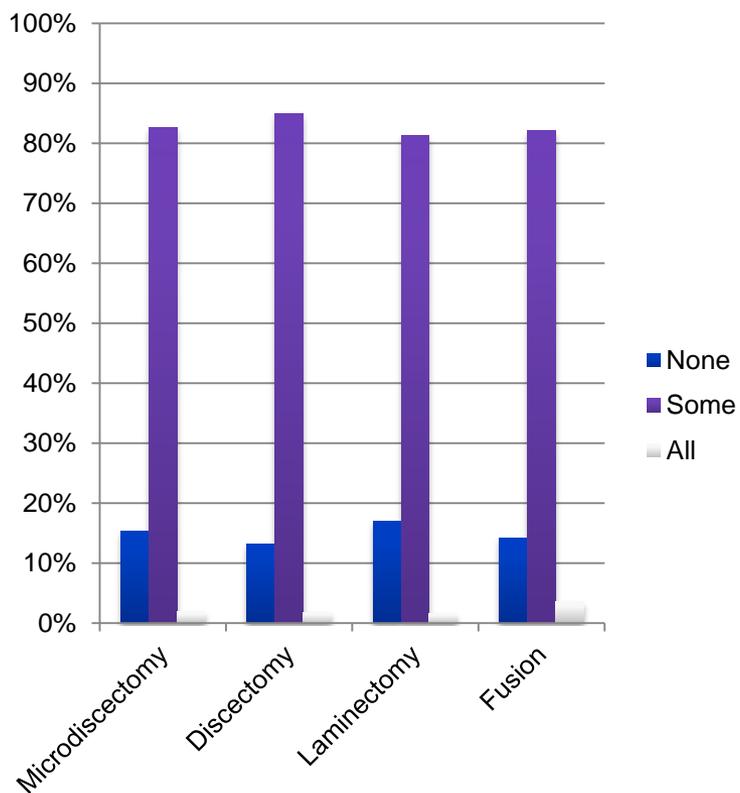
Routine post-op outcome measurement used at 83% of hospitals

Outcome measures used:

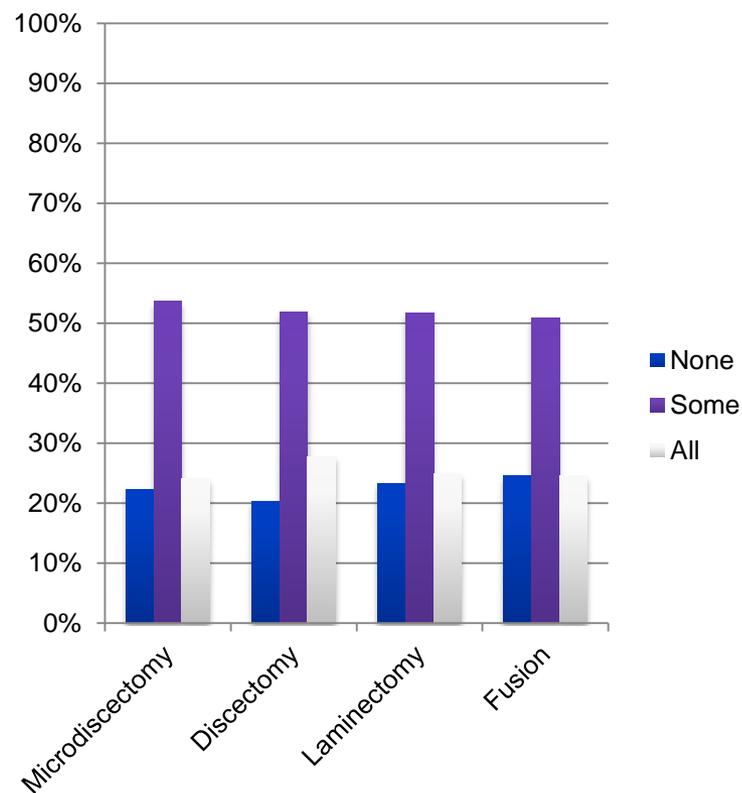
- Pain (VAS/numeric scale) 96%
- Straight leg raise 38%
- Spinal ROM 9%
- 10m walk 6%
- Oswestry disability index 2%

Referral on

Referral to Inpatient Rehab



Referral to Outpatient Physio



Discussion points

- High response rate (79%)

Physiotherapy service

- All hospitals provided a post-operative physiotherapy service
- Minimal difference between the timing and frequency of service
- Findings comparable to UK studies (Rushton et al. 2014, Williamson et al. 2007)

Physiotherapy Intervention

- Overall emphasis on post-operative mobility and patient education
- High level of variability in the exercises prescribed and the post-operative movement and activity restrictions

Outcome measurement tools

- Almost all hospitals assess pain
- Only a very small number formally assess physical function

Variation based on surgical procedure

- Very little variation in physiotherapy intervention reported based on the surgical procedure
- Likely reflects the focus of intervention being on mobility tasks, which are to be similar irrespective of the surgical procedure
- Need for further research to establish whether intervention targeted towards surgical procedure are more effective at optimising patient outcome

Influence of individual surgeon protocols

- More than one surgeon performed lumbar spinal surgery at 84% of the participating hospitals
- Either the structure of the physiotherapy service or the content of the physiotherapy intervention varied based on individual surgeon preferences at just over half of those hospitals
- Main differences being post-operative advice
- Results consist with UK data (Rushton et al. 2014, Williamson et al. 2007, McGregor et al. 2006)
- Further research is required to evaluate the role of post-operative movement and activity restrictions

Conclusions

- Physiotherapists are routinely involved in the management of patients following lumbar spinal surgery across Australia
- There is little research available to guide physiotherapy practice in this area
- Physiotherapy interventions provided vary from hospital to hospital
- This survey provides information regarding current practice, and identifies key areas requiring further research into the effectiveness of specific physiotherapy interventions

What now???

Further research needs to be undertaken to establish:

- The impact of walking and activity in the immediate post-op period
- The role of exercise commencing in the immediate post-op period
- Targeted intervention (surgical procedure, specific patient presentation etc)
- The impact of post-operative restrictions on recovery
- How to integrate routine outcome measurement into clinical practice

What now???

“Does early post-operative physical activity predict recovery of function six months after spinal surgery?”

- What proportion of time do patients spend performing physical activity (standing and walking) compared to sedentary behaviour (sitting and lying) in the week following lumbar spinal surgery?
- Does the amount of time spent walking during the week following lumbar spinal surgery predict improvement in function at six months?
- What factors influence the amount of physical activity patients perform in the week following lumbar spinal surgery?

References

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