Backward Chaining Approaches to gain skills to get down and up from floor, avoid long lies, reduce fear, and enjoy a bath again!

October 8, 2019 12:00 PM EST
Dawn Skelton & Bex Townley

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Backward Chaining Approaches to gain skills to get down and up from floor, avoid long lies, reduce fear, and enjoy a bath again!

October 8, 2019 12:00 PM EST
Dawn Skelton & Bex Townley
Backward Training Approaches to gain skills to get down and up from floor (avoid long lies, reduce fear, & enjoy a bath again!)

Dawn Skelton¹,² & Bex Townley²

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²Later Life Training
United Kingdom
POLL 1 – What is your background?

Please choose an option which best fits your experience/expertise

- Physiotherapist
- Occupational Therapist
- Rehabilitation Assistant
- Nurse
- Exercise Instructor
- Clinician/Medic/Doctor
- Other
POLL 2 – What setting do you work in?

Please choose an option which best fits your work setting

- Acute Hospital setting
- Rehabilitation/Day Hospital setting
- Care home/Residential Care
- Care at home Service
- Community Setting
- Other
Why is the ability to get up from the floor after a fall so important?

• More than an hour on the floor leads to poor outcomes\(^1\)
  • Increased risk of hospitalization
  • Poor recovery of physical function
  • Increased possibility of admission into residential care facilities
  • Death

• Use of ambulance services to ‘pick people up’ but not take them to hospital
  • 40% of older people who fall are not transported to Hospital (UK)\(^2\)
  • Cost £75.5 mill in UK in 2012 and projected to rise to £118.9 mill by 2030\(^3\)
  • 30% of older recipients of community care services in Australia\(^4\)

• Increased fear of falling and ‘post fall syndrome’\(^5\)

History – Backward Chaining

• Simpson & Salkin (1993) - 11% of physiotherapists taught older adults to rise from the floor

• Simpson & Mandelstam (1995) - 19% of potential fallers were capable of being taught to rise
  • Before Janet Simpson changed practice the method of teaching was NOT backward chaining! The method was to lower the person to the ground and then ask them to rise

• For over 20 years the Backward Chaining approach has been part of usual physiotherapy practice (But is it?...)

Getting up off the floor?

- Fleming & Brayne (2008) – in over 90s, 80% cannot rise after a fall and 30% lay there for an hour or more (long lie)
  - Inability to rise associated with increased age, reported mobility and severe cognitive impairment
  - Poor cognition predicted long lies
  - Long lies associated with admission to hospital and subsequent moves into residential care
  - Call alarms widely available but rarely used

- Schwickert et al. (2016) - slower time to rise (60 yrs+) was associated with
  - lower leg extension power
  - poor knee and hip flexibility

Getting up off the floor?

- Tinetti, Liu & Claus (1993) – 47% of non-injured fallers could not get up after a fall (older and with poorer balance)

- Ardali et al. (2018) investigated people's self-reported ability against actual ability (independent or with chair for balance)
  - 90% correctly identified their own ability to perform a floor transfer

- Ardali et al. (2019) compared self-reported ability (independent, assisted, and dependent) with the Floor Transfer (FT) test, the Physical Functioning Scale and the Short Physical Performance Battery (SPPB)
  - Predictors of inability to rise included - advanced age, help needed during ADL, frequent faller, needed 2-handed assistive devices for walking, housebound

- Recommended using a backward chaining approach to training

Floor rise and future falls

- Bergland & Laake (2005) - ability and timed floor rise is an independent risk factor for serious fall related injury (OR 2.1)
  - Those with arthrosis of the hip and difficulty walking indoors most likely unable to rise
  - 1 in 3 women unable to rise predicted to have a serious fall related injury in the next 12 months
UK Context

• Chartered Society of Physiotherapists (UK) (2012)

Guidelines for the Physiotherapy management of older people at risk of falling

Key messages

• Ask all older people if they are able to get up from the floor following a fall
• Check that older people have a strategy to get help if they fall and are unable to rise
• Teach and practice how to get up from the floor, when possible

https://bit.ly/2Qfbv6w
UK Context

• National Institute of Clinical Excellence (2013): Clinical Guideline CG161
• Information for the Public (Questions to ask your healthcare team)

- How do I get up off the floor if I do fall?
- How do I get help if I've fallen, for example if I can't get up?
- How to cope if they have a fall, including how to summon help and how to avoid a long lie.

UK Context

- Chartered Society of Physiotherapists (UK) (2019)

A long lie on the floor is associated with serious injury, increased mortality and increased risk of secondary complications\(^8\). Physiotherapists teach people how to get up from the floor safely and/or how to minimise time spent on the floor. Specific strength training may enable individuals to get up from the floor independently\(^9\).

Getting up off the floor

- Skelton et al. (1995/1996) – floor rise ability does not improve with pure strength training but does with functional exercise including backward chaining
- Hofmeyer et al. (2002) - delivered training to improve floor rise ability (6 sessions over 2 weeks)
  - Improved floor-rise ability and perceived difficulty and symptoms associated with the rise
- Reece & Simpson (1996) - compared the ‘conventional method’ to the ‘new’ Backward Chaining method
  - Patients were very fearful of the conventional approach and Simpsons research showed many refused to try.
  - Experiment had to be discontinued as it was unacceptable to proceed
- Zak (2006) – compared the “conventional” method (rolling on to four point kneel, moving to kneel standing, then standing), or the backwards chaining approach (more effective)

Getting up off the floor

- Can interventions improve ability to rise from the floor?
- Mixed methods systematic review – 41 studies
- Meta-analysis sub group including upper and lower limb resistance training showed improvement in ability to rise from the floor
- Other results were also promising for intervention approaches focusing on training the task of getting up from the floor

Rationale for inclusion in falls prevention exercise (FaME)

- Avoid long lies
- Improve confidence and reduce fear
- Improve functional ability around and outside the home
- Key component of physiotherapy guidelines

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Exercise for falls management: Rationale for an exercise programme aimed at reducing postural instability

Dawn A. Skelton and Susie M. Dinan
FaME – The Evidence Base

• RCTs in frequent falling women >60/65yrs\textsuperscript{1,2,3}
• RCT in sedentary >65s from GP practices\textsuperscript{4}
• Feasibility in visual impairment\textsuperscript{5}
• Evaluations in practice\textsuperscript{6} and Implementation Study >65s self/GP referral\textsuperscript{7}

• Reduces falls rate and falls risk
• Increases habitual physical activity (105-170 mins/wk)
• Improves physical function and confidence
• Reduces fear of falling
• Regains the skill to get up from the floor
• Cost effective if delivered with fidelity\textsuperscript{8,9}

But in practice....

- PhISICAL Study looked at implementation of FaME in practice
- Fidelity in the real world – 72-78%
  - Including lack of confidence to deliver floorwork

- Barriers?
  - No hoists available
  - Dirty floors
  - No time in session
  - Not all in a group are ready for it
  - Group too big
  - What if they can’t get up?

@LaterLifeTrain
POLL 3 – Current Practice?

• Do you routinely ASK if older people who have fallen can get back up off the floor?

• Yes
• No
• Not applicable in my job role
Comparison with UK

Do you routinely ASK if older people who have fallen can get back up off the floor?

81% Yes
19% No

79 votes • Final results

12:12 PM - 4 Jun 2018
POLL 4 – Current Practice?

• Do you routinely TEACH older people to get up from the floor if they have fallen?

• Yes
• No
• Sometimes
• Not applicable in my job role
## Comparison with UK

Do you routinely TEACH older people how to get up off the floor if they have fallen?

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<td><strong>45%</strong></td>
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<td><strong>21%</strong></td>
<td>Sometimes (comment why)</td>
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71 votes • Final results

Physiotherapists only
So what does backward chaining look like?
Getting down and up from the floor - link by link analysis
Lets get practical

Make a space and join in, it’s helpful to ‘feel’ these body positions and the requirements for mobility, flexibility, power and strength.

In this session we will analyse;

- Full movement sequence of BC approach & floor transitions
- Review each link with skill up considerations
- Examples of some floor coping skills
-(Post your questions as we go)
Backward chaining links of the chain

• We know there are barriers (participant and instructor/therapist related) that prevent this activity e.g. painful knees, hands, hips, concerns with not being able to get up..

• The backward chaining approach assumes mastery of one link before moving onto the next, so technically it can always be a win-win

• What is the start point/where in the chain?
(Video 1: Therapy led, backward chaining approach to teaching getting up from the floor)

We are going to watch this short video twice.
- As you watch the first time, consider what each individual link could be i.e. what is the start and beginning of each link of the chain/movement
- The second time I will talk through the links
- Please post any questions you have
Link-by-link analysis in photographs: getting up from the floor
1. From supported wall sit position
2. Prepare for box position/seated weight transfer
3. Prepare for box position/weight shift to hands
4. Prepare for box position/weight shift over hands
5. All 4’s box position
6. Crawl
7. Hand to chair/prepare for push up
8. Hand to chair/prepare for push up
8a. Push up
9. Prepare to stand
10. Controlled sit
Link-by-link skill up examples and considerations
1. From supported wall sit position

**Skilling up - examples;**

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip flexibility
2. Prepare for box position/seated weight transfer

Skilling up - examples;

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip mobility - hip walking in chair or on a bed for weight transfer skills
3. Prepare for box position/weight shift to hands

**Skilling up - examples;**

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip mobility - hip walking in chair for weight transfer
- Shoulder mobility, strength, wrist strengthener
4. Prepare for box position/weight shift over hands

Skilling up - examples:

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip mobility - hip walking in chair for weight transfer
- Shoulder mobility, strength, wrist strengthener
- Wall press for trunk/postural muscles and shoulder stability
- Wrist strengthener
5. All 4’s box position

Skilling up - examples;

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip mobility
- Shoulder mobility, strength, wrist strengthener
- Wall press for trunk/postural muscles and shoulder stability
- Transitions into box positions on plinth/bed

Considerations for painful knees/wrists;
- Bum walking instead of crawling
6. Crawl

Skilling up - examples;

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip mobility
- Shoulder mobility, strength, wrist strengthener
- Wall press for trunk/postural muscles and shoulder stability
- Transitions into box positions on plinth/bed

Considerations for painful knees/wrists;
- Bum walking instead of crawling
7. Hand to chair/prepare for push up

Skilling up - examples;

- Seated trunk mobility; rotation, lateral flexion/side bends, back extensions
- Hip flexibility
- Hip walking in chair for weight transfer
- Shoulder mobility, strength, wrist strengthener
- Wall press for trunk/postural muscles and shoulder stability
- Transitions into box positions on plinth/bed

Considerations for painful wrists;
- Picture shows elbows to chair
  NB less reliable grasp for stability
8. Hand to chair/prepare for push up

Skilling up this link - examples:

- Standing lunges to different levels/use platforms to land on
- Hip flexor stretch
- Shoulder mobility, strength, wrist strengthener
- Wall press for trunk/postural muscles and shoulder stability
- Ankle mobility – calf stretch

Considerations for painful knees;

Use of cushions under knee or shin to shift load
8a. Push up

Skilling up this link - examples;

• Lunges, different levels, include power, focus on foot placement
• Hip flexor stretch
• Shoulder mobility, strength, wrist strengthener
• Wall press for trunk/postural muscles and shoulder stability
• Ankle mobility – calf stretch

Considerations for painful knees;

Use of cushions under knee or shin to shift load
9. Prepare to stand

Skilling up this link - examples;

- Sit to stand
- 180 turn

Considerations for fear:

Ensure furniture secure, close to a wall, change support options (height/width etc)
10. Controlled sit

Skilling up this link - examples;

- Sit to stand

Considerations for fear:

Ensure furniture secure, close to a wall, change support options (height/width etc)
Video 1: floor transitions review
Floor coping skills and alternatives to therapy led approach to getting up
Video 2 & 3 bum walking to stairs/sofa
Key messages

• Ascertain floor rise history
• The starting point is the win-win point (it will depend on every individual)
• Skill up for success - mobility, flexibility, strength, power all contribute but...
• Correct body positions, timely instructions, use of levers & centre of mass will make transitions easier
• How far can you go? Even a few links can reduce a long lie
• Plan for success, make a plan, talk about it...
FINAL POLL – has anything changed for you?

Will you consider teaching more older people (even first few links of) backward chaining approach as a result of this webinar?

- Yes
- No
- Unsure
Further information on LLT

Visit the website
https://www.laterlifetraining.co.uk/

Download the backward chaining leaflet for those who can practice at home
https://bit.ly/2mMbKLZ

Become a Member (free and paid options)
Questions?

Type your questions into the Q&A box.

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