Spine sparing strategies: Moving safely to prevent fractures

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Agenda

Why do I need to modify activities?

Which activities do I need to modify?

How do I modify them?
Why do I need to modify my activities?
- Can help prevent spine fractures

Mechanical loads on the spine influenced by:
- Falls
- Body posture or activity
- Spinal curvature
- Person’s height & weight
- Muscle forces
- Disc degeneration
- Neuromuscular control

Credit: Wikimedia Commons
Public Domain
Christiansen & Bouxsein Current Osteoporosis Report 2010; 8:198–204
Why do I need to modify activities?

“...sometimes people do very stupid things in the name of expediency, [such] as balancing on a chair to reach a light bulb or to dust high shelves”.

Older adults with osteoporosis but *no* vertebral fracture:

- Should be able to do daily activities with proper body mechanics
- May need to modify/avoid high risk activities (e.g., skiing, golf)
- Work-related lifting → see a physical or occupational therapist for assessment/education

Older adults with osteoporotic vertebral fracture:

- Consider seeing a physical or occupational therapist
  - especially with impairments in balance or posture, pain

- May need to restrict housekeeping to light activities, and to get help with things or assistive devices e.g., heavy lifting, cleaning gutters, shoveling, or changing light bulbs.

- Avoid sitting or standing for long periods → Intersperse with 5-10 minute periods lying in supine
Which activities do I need to modify?

Can I play golf?

Can I do yoga?

How much weight can I lift when exercising?
Which activities do I need to modify?

**SPINE MOVEMENTS to LIMIT:**
- **REPEATED/SUSTAINED**
- **WEIGHTED**
- **END-RANGE**
- **RAPID/FORCEFUL**
- **COMBINED:**
  - Flexion – bending forwards, slouching
  - Rotation - twisting
  - Side Bending
  - Combinations

- Reduce the cumulative effect of flexion/slouching/rotations (daily life & work)
- Care in lowering a heavy weight/object from overhead

Scenarios where injuries often occur are:

- Lifting using maximal strength (e.g., furniture)
- Lifting to low or high areas (e.g., in kitchen, on plane)
- Walking or stepping onto slippery surfaces (e.g., wet bathroom or kitchen floor, entryway, pool decks)
- Precarious balancing (e.g., standing on unstable footstool, chair or ladder and reaching overhead)
- Rotation with feet planted (e.g., vacuuming or raking)
- Twisting or bending in combination with lifting (e.g., bending over and lifting mattress to make bed).
How can I modify them?

What is “spine sparing”? modify activities that apply rapid, repetitive, weighted or end-range flexion (forward bending) or twisting torque to the spine.

How?

Â Hip hinge
Â Step-to-turn
Â Avoid lifting from/lowering to floor
Â Slow, controlled twist, not to end of range of motion
Â Balance loads on either side of body
Â Support trunk when flexing
Â Hold weight close to body, not overhead
Alignment and Core Stability Cues

<table>
<thead>
<tr>
<th>Target</th>
<th>Example Cues</th>
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</thead>
<tbody>
<tr>
<td>Forward head posture</td>
<td>• Gently bring head back so it is as aligned with shoulders as possible</td>
</tr>
<tr>
<td>Curve or “hump” on back, rounded shoulders</td>
<td>• Imagine there are weights hanging from your shoulder blades, pulling them toward your back pockets;</td>
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<tr>
<td></td>
<td>• Lift your breastbone gently up to the ceiling;</td>
</tr>
<tr>
<td></td>
<td>• Take a breath, fill the back of your lungs first.</td>
</tr>
<tr>
<td>Abdominal bracing to support the spine</td>
<td>• Gently brace your abdomen as if someone were about to poke you in the stomach.</td>
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</table>
Hip Hinge

Use a dowel to do a hip hinge properly
How to NOT do a hip hinge

Do NOT curve through upper spine, dowel will come off sacrum

Do NOT look down before hinging, head will come off of dowel
Tying shoes
Tying shoes

How to tie or put on shoes with a platform
Tying shoes

How to tie or put on shoes with limited hip range
Getting out of bed
How **NOT** to pick up an object

- Do **NOT** round your spine
- Do **NOT** reach too far in front of you
- Do **NOT** only bend at the hips
Picking up objects from the floor
HOW NOT TO MOVE A BOX

Do not bend over only from the waist or round your spine to reach and pick up any items.

Do not twist when putting an item down.
HOW TO MOVE A BOX

...Continued.

5. Hold the item in front of and close to your body.

6. Step to turn around, do NOT simply twist, to place the object in another spot.

7. Once you have turned around, bend at the knees while keeping your back straight and place the item down.

www.bonefit.ca
How **NOT** to move an object

- Do NOT only bend at the hips
- Do NOT round your spine
- Do NOT twist when putting an item down
Step to turn

How to move an object
Raking

How to rake with good form
Sweeping with good form
How to shoulder check
End-range trunk flexion

<table>
<thead>
<tr>
<th>Instead of:</th>
<th>Do:</th>
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<tbody>
<tr>
<td>Yoga/Pilates movements that involve flexion</td>
<td>Supported flexion, not to end-range e.g. modified downward dog with hip hinge and chair</td>
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</tbody>
</table>

http://truestar.com/yoga/pose_info.aspx?posId=87&TB_iframe=true&KeepThis=true&height=525&width=648
DOWNWARD FACING DOG WITH A CHAIR

1. Stand in alignment facing the back of the chair.
2. Place your hands on the back of the chair and begin to hip hinge forward.
3. Step one foot back and then the other so that you are farther away from the chair and continue to hip hinge until your upper body is perpendicular to your legs (or as close to this position as you are comfortable).
4a. If you can, allow your head to drop between your arms until your ears are in line with them.

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PERFORM ______ REPETITIONS • PERFORM ______ SETS

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### End-range trunk rotation

<table>
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<th>Instead of:</th>
<th>Do:</th>
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</thead>
<tbody>
<tr>
<td>Trunk rotation machine or twisting movements for abs</td>
<td>Side plank on wall or floor</td>
</tr>
</tbody>
</table>
1. Stand at the centre of the mat.

2. Bring one foot forward, keeping your head and back in alignment and come into lunge position, lowering the back knee to the floor.

3. Bring other knee onto floor.

4. Hinging at the hips, reach forward to place one hand on the floor.

5. Place the other hand on the floor.

6. Place elbows on the floor one at a time.

**Continued on next page...**

PERFORM ______ REPETITIONS • PERFORM ______ SETS

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FRONT & SIDE PLANK

...Continued.

7. Move from your knees to toes if possible, making sure that your body is in alignment.

8. Hold this position.

Transfer to Side Plank

1. Go through steps 1-6 from “Front Plank”.

2. Once you are on your elbows, turn so you are lying on your hip, with one elbow on the floor, and the other hand resting on your top hip.

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PERFORM _______ REPETITIONS • PERFORM _______ SETS

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Precarious balancing

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<tbody>
<tr>
<td>Standing on a chair</td>
<td>Use a step stool with a wide base of support and non-slip materials on the stepping surface and interface with floor.</td>
</tr>
</tbody>
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http://toonclips.com/design/4837

http://www.hayneedle.com/home-improvement-and-maintenance/step-stools_folding_list_183642_4295145071
Check out these helpful videos:

**How to do activities to safely do every day activities:**
http://www.osteoporosis.ca/after-the-fracture/videos/

**How to modify golf, sweeping, dishwasher loading, spine sparing strategies:**
Too Fit To Fracture Team
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Alexandra Papaioannou
Angela Cheung
Ari Heinonen
John Wark
Kathy Shipp
Maureen Ashe
Norma MacIntyre
Stuart McGill
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Linda Lee

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