

Technological Revolution: Falls and Injury Prevention

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FALLS ARE THE **LEADING**
CAUSE OF INJURIES
AMONGST SENIORS

95% OF ALL
HIP FRACTURES
&
40% OF ALL
NURSING HOME
ADMISSIONS ARE A
DIRECT RESULT OF
FALLING



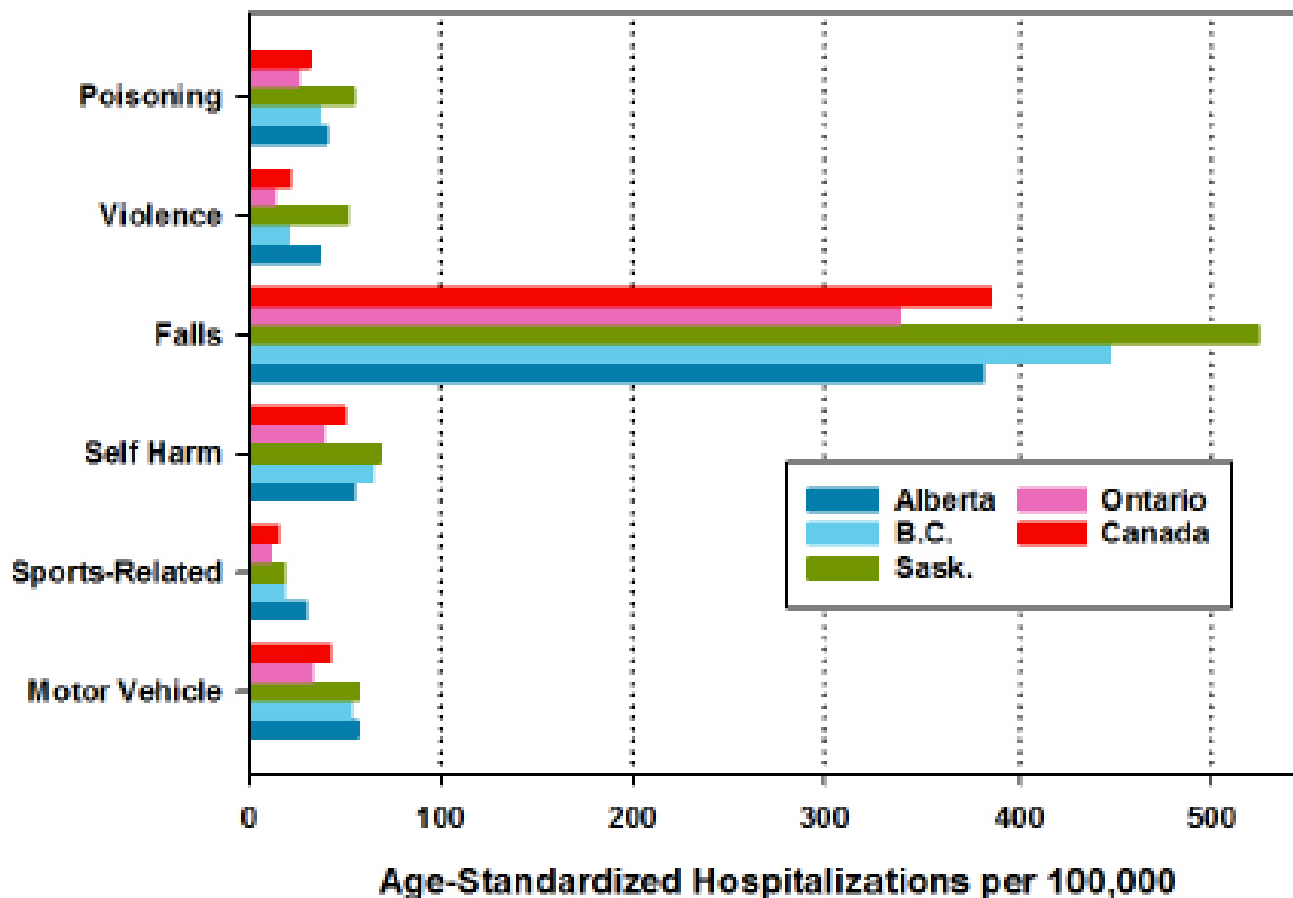
1 OUT OF **3** ALBERTANS OVER 65



1 OUT OF **2** ALBERTANS OVER 80

WILL FALL
AT LEAST
ONCE
A YEAR¹

ICCER Falls Risk Management Conference, November 2017



Alberta Health, Health Standards, Quality and Performance Division,
Analytics and Performance Reporting Branch, 2017



Cochrane
Library

Trusted evidence.
Informed decisions.
Better health.

Authors' conclusions

Group and home-based exercise programmes, and home safety interventions reduce rate of falls and risk of falling.

Intervention

Lesley D Gille

Sarah E Lamt

Online Publica

Multifactorial assessment and intervention programmes reduce rate of falls but not risk of falling; Tai Chi reduces risk of falling.

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Overall, vitamin D supplementation does not appear to reduce falls but may be effective in people who have lower vitamin D levels before treatment.

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Online

Authors' conclusions

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In care facilities, vitamin D supplementation is effective in reducing the rate of falls. Exercise subacute hospital settings appears effective but its effectiveness in care facilities remains uncertain due to conflicting results, possibly associated with differences in interventions and levels of dependency. There is evidence that multifactorial interventions reduce falls in hospitals but the evidence for risk of falling was inconclusive. Evidence for multifactorial interventions in care facilities suggests possible benefits, but this was inconclusive.

What is the solution?



“Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.”

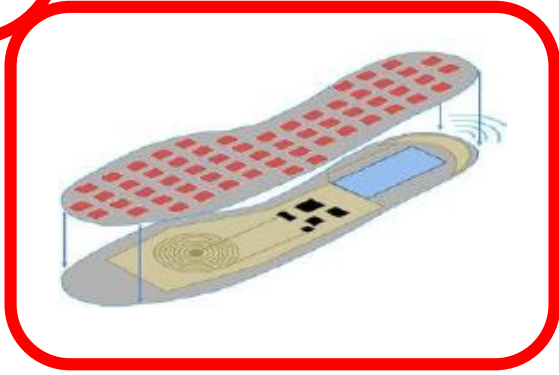
Steve Jobs

Age-Friendly Cities and Communities

- SMART Cities
- Interactive television
- Medication management tools
- Body sensors
- Robotics
- Autonomous vehicles

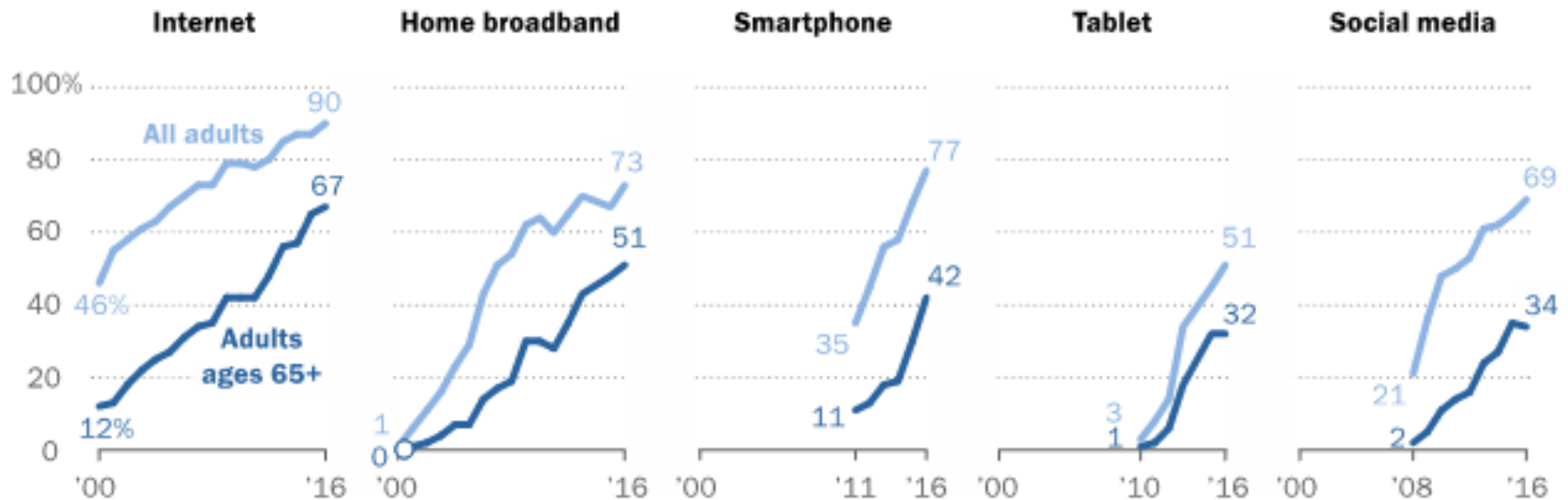


Wearable Technology



Smart phone adoption among seniors has nearly quadrupled in the last five years

% of U.S. adults who say they have or use the following



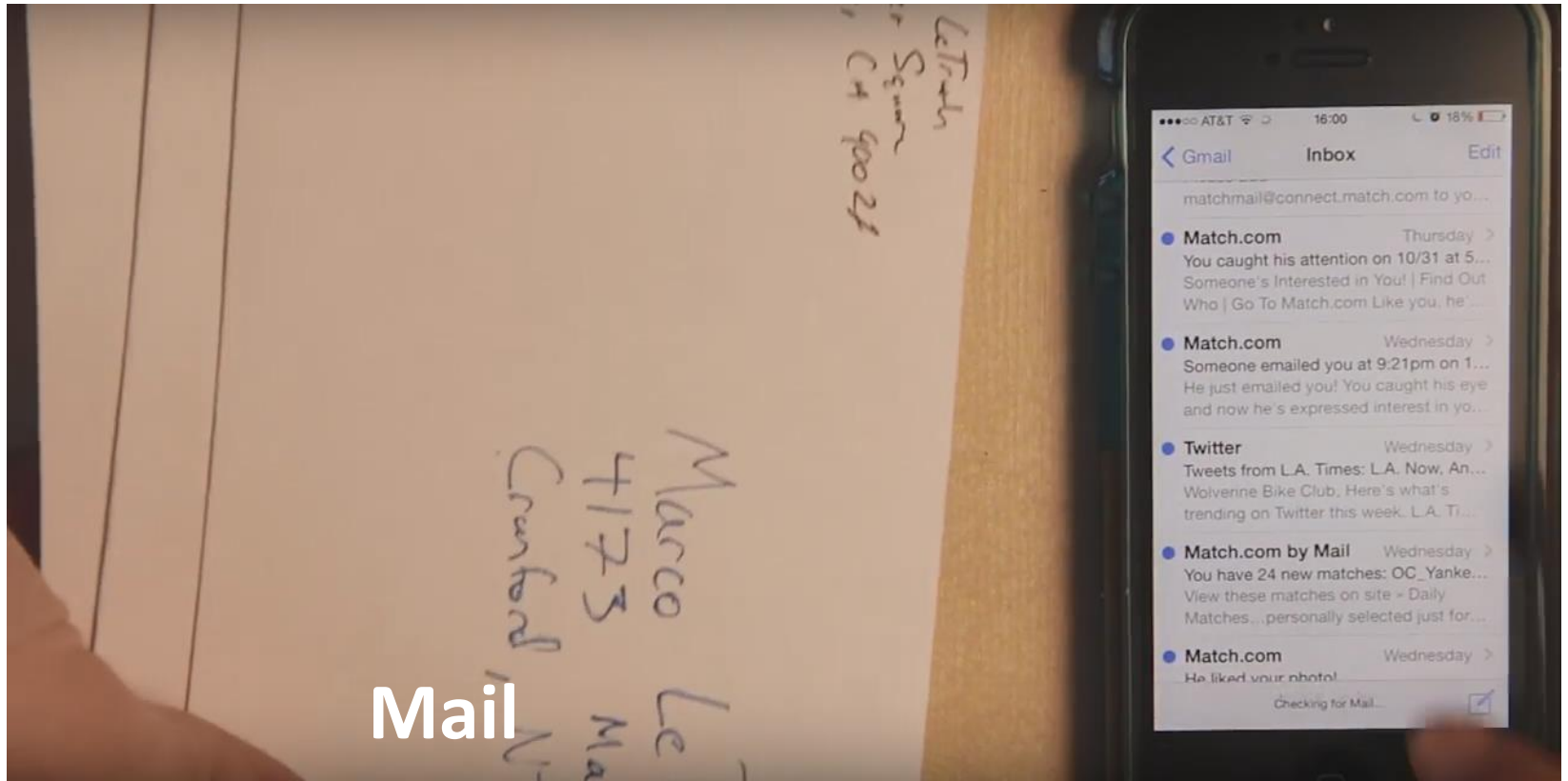
Source: Survey conducted Sept.29-Nov.6, 2016. Trend data are from previous Pew Research Center surveys.
"Tech Adoption Climbs Among Older Adults"

PEW RESEARCH CENTER

“As is true for the population as a whole,
there are also substantial differences in
technology adoption within the older adult
population based on factors such as age,
household income, and educational
attainment.”

PEW Research Centre (May 2017) Tech
Adoption Climbs Among Older Adults

Things You No Longer Need Because of Smartphones



It's the digital age, yet
falls prevention apps are
few and far between

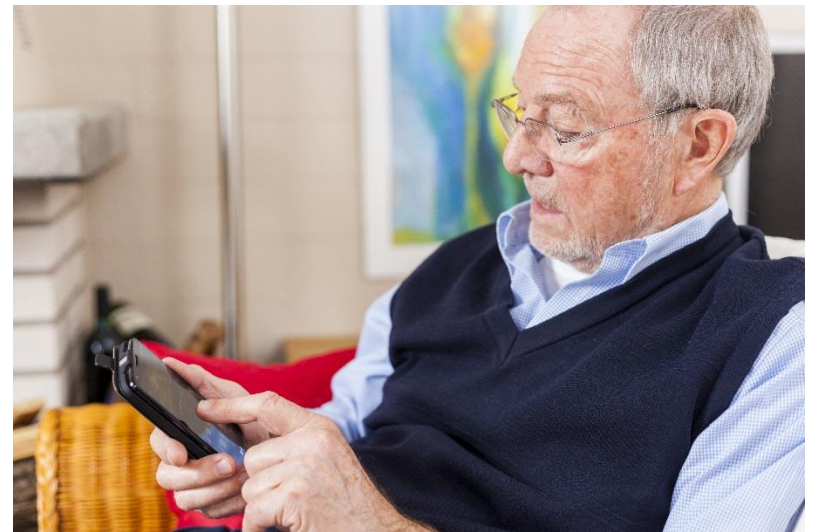
Fall Prevention App



<http://clockyourself.com.au/>

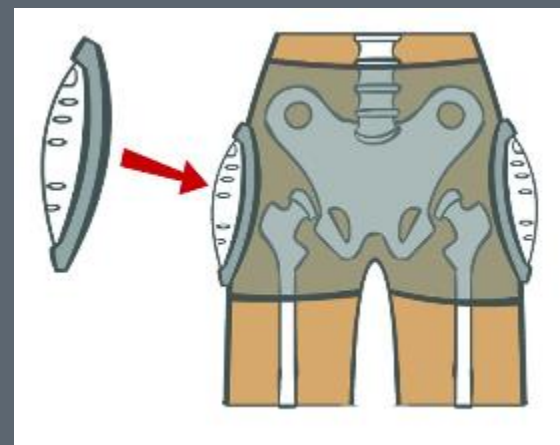
Is there an app for that?

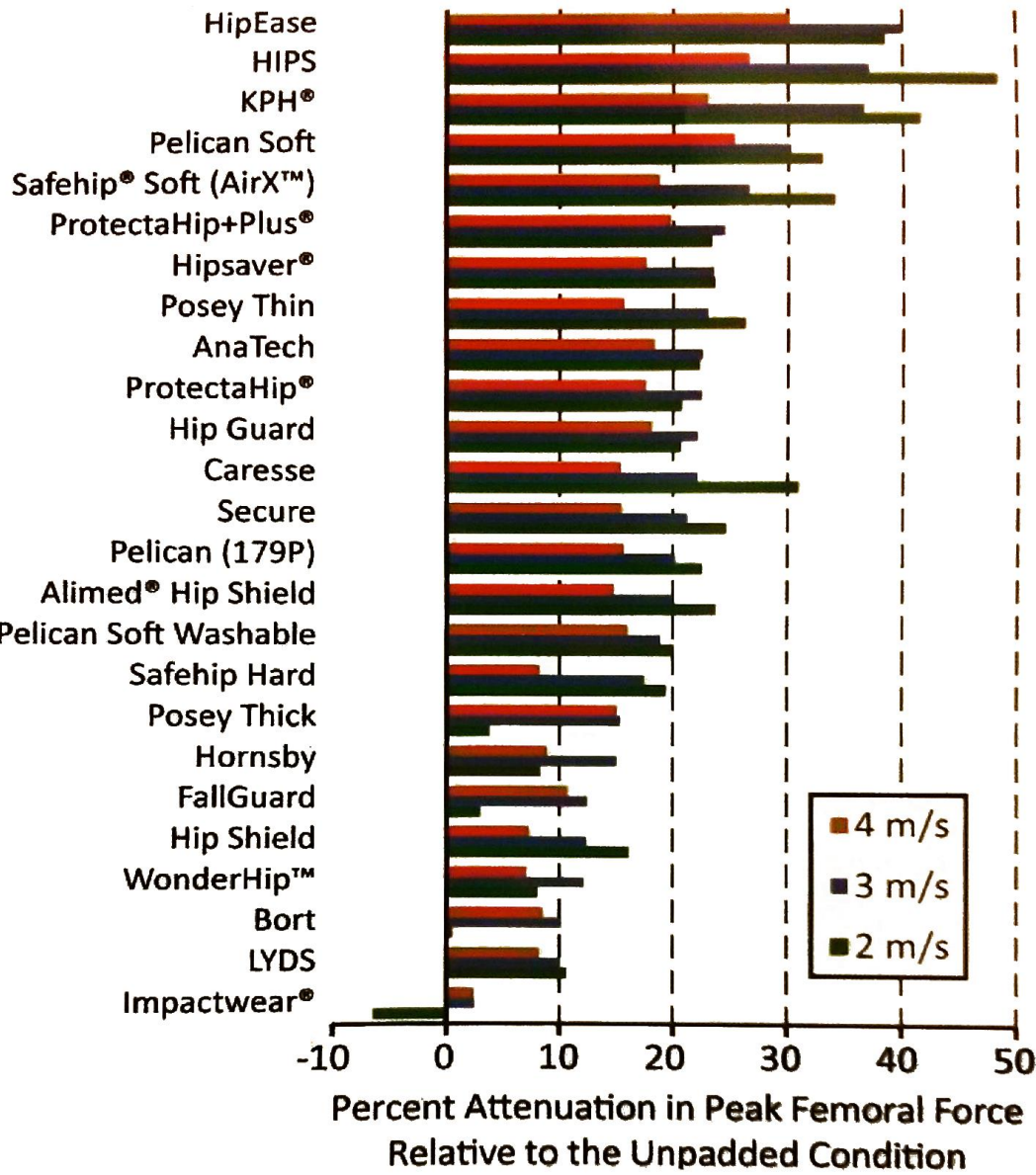
- Mobile phones detect and classify falls
- Options available for all preferences and budgets



Hip Protectors

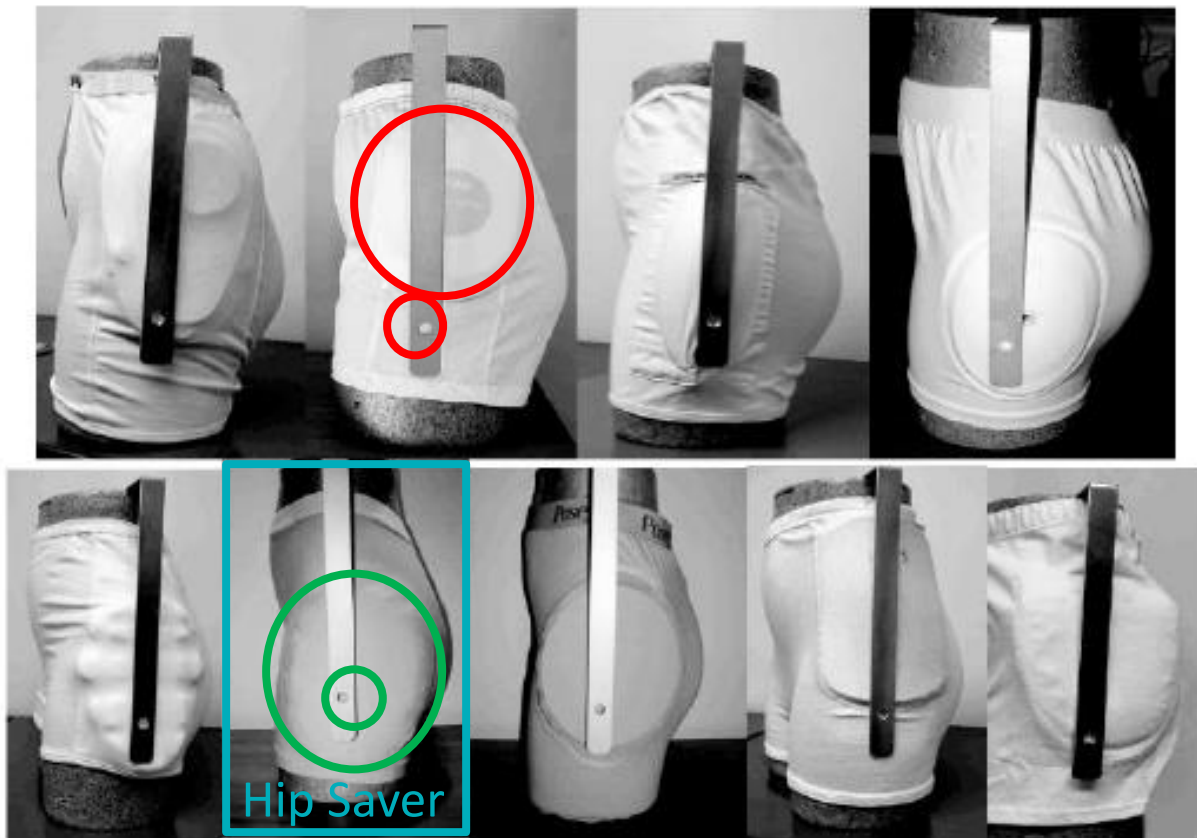
- Special garments (underwear, shorts or pant)
- Soft pads protect hips
- Promoted across Canada for high-risk populations





- Ranged -7% to 40% force reduction

Hip Protector Placement



**Hip Protectors reduce risk for
hip fracture by up to 80% if
worn at time of falling**

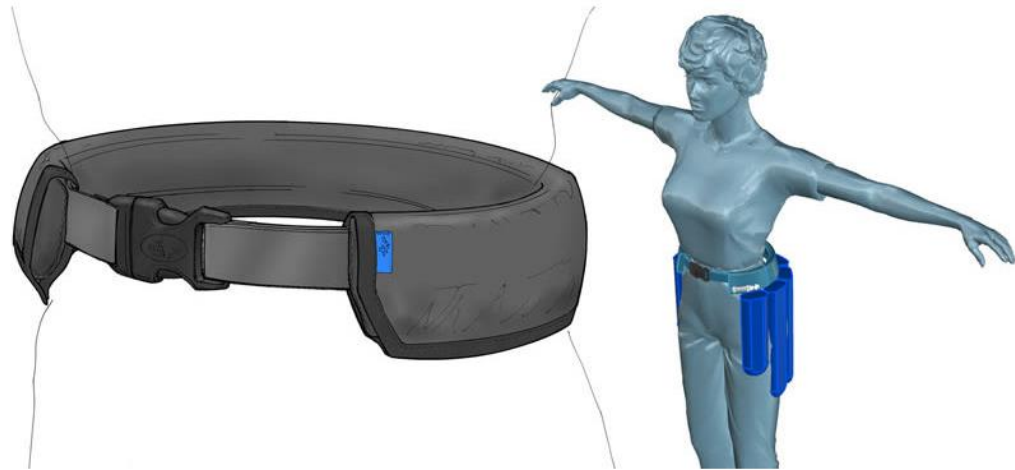
Stick-on Hip Protectors

1. Increase force attenuation
2. Pad secured in place
3. Continuous protection
4. Decrease staff workload
5. No laundry requirements
6. Not patient specific
7. Lower unit cost



Inflatable Hip Protectors

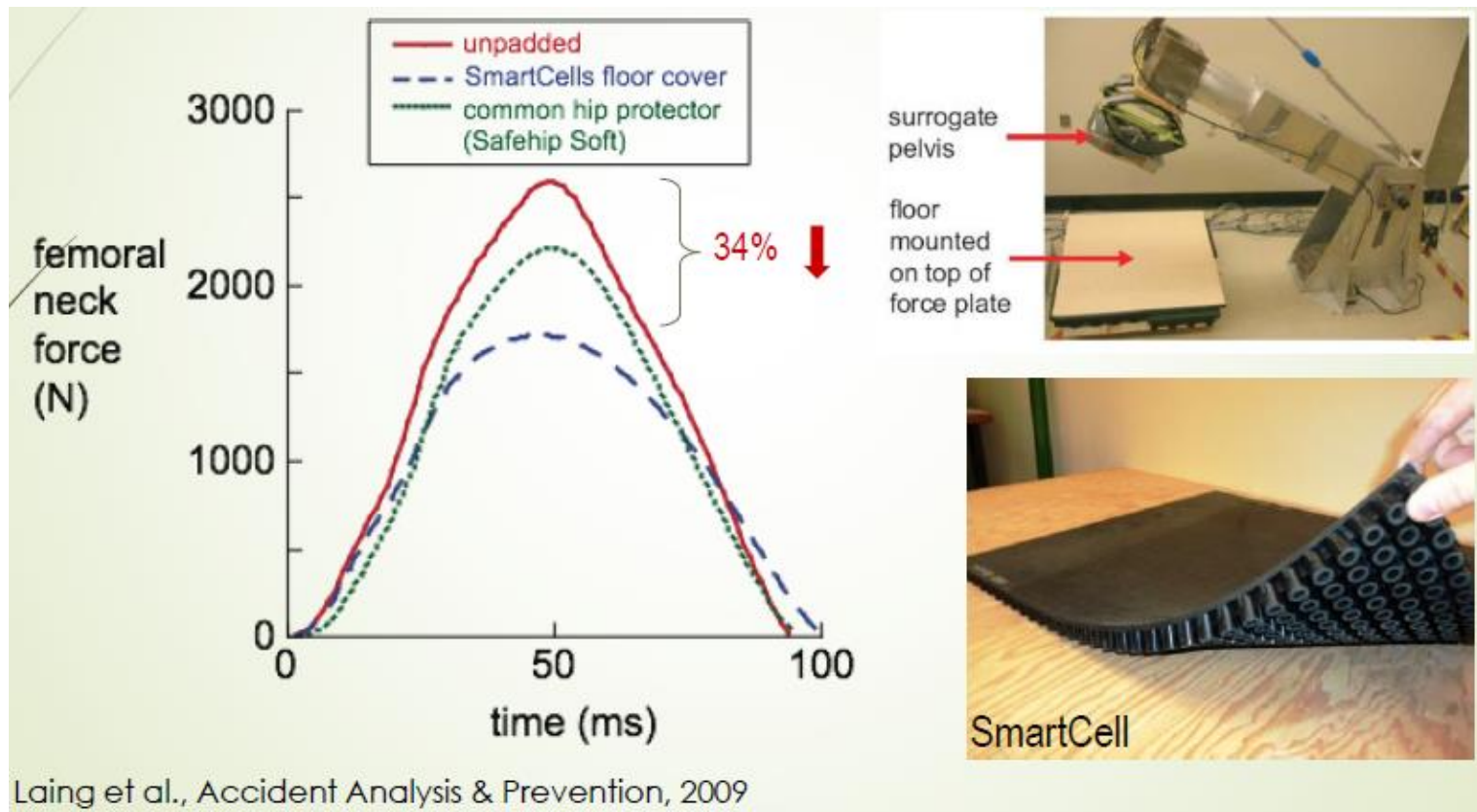
- Safety belt
- Instantly inflates when it detects wearer is falling
- Motion sensors
- Compressed air



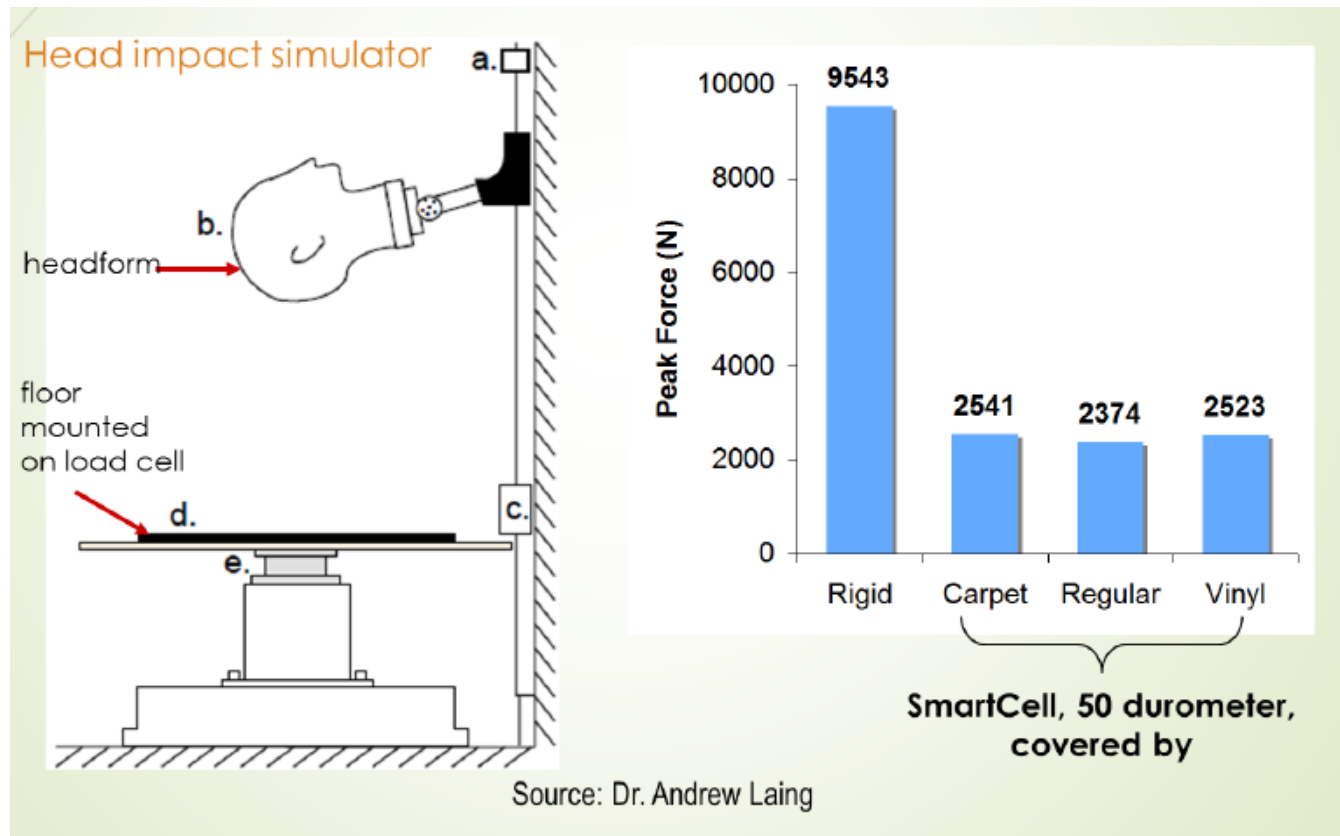
Compliant flooring

- Flooring system with shock absorbency
- Cushioning technology
- Respond dynamically like springs
- Doesn't impair balance

Force Reduction provided by SmartCells during a simulated fall on the hip averaged 34%, exceeding most commercial hip protectors



Force reduction provided by SmartCell during a simulated fall on the head averaged 70%



Virtual reality

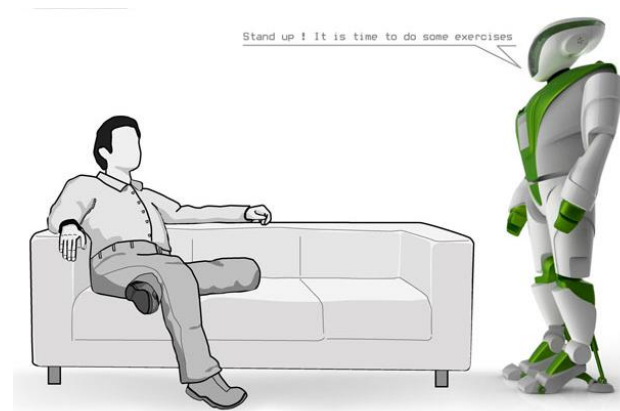


Robotic Movement Sensing System

- Kinect-style home monitoring system
- Predicts fall risk
- 86% chance of falling with declined walking speeds
- Identify UTI's



Robotics



“The advance of technology is based on making it fit in so that you don't really even notice it, so it's part of everyday life.”

Bill Gates

Thank You

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