Better Brain Aging Through Less Falls

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There are two age groups associated with a peak in traumatic brain injury:

- A young group
- An elderly group

The risk for TBI increases substantially once individuals reach 65 to 70 years of age.
Because of the position of the brain in the cranium sudden acceleration, deceleration, or torsion injuries can cause the brain to strike the skull, causing injury

There are two types of injury

- Direct trauma causing contusion, hemorrhages and lacerations (coup/contrecoup injuries)
- Diffuse axonal injury from stretch injuries to the deep white matter
- The outcome of TBI tends to be worse for the elderly as well
  - Rates of hospitalization and death are higher among older adults
  - A slower regain of function is seen in elderly individuals
Older adults are more likely to experience a TBI as a consequence of a fall.
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By CDC estimates one out of three adults aged 65 or older falls each year.
Older adults are more likely to experience a TBI as a consequence of a fall:

- Deterioration of senses
- Diabetes
- Arthritis
- Dementia (Alzheimer’s)
- Parkinson’s
- Medications
Older adults are more likely to experience a TBI as a consequence of a fall

- Deterioration of senses
- Diabetes
- Arthritis
- Dementia (Alzheimer's)
- Parkinson's
- Medications
TBI
- Short term - cognitive changes
- Long term - development of Alzheimer’s
Cognitive difficulty are different from those seen in Alzheimer’s.

- Problems in attention are prominent.
- A slow speed of processing can be seen.
Brain changes associated with falls in the elderly are more like changes seen in normal aging.

- With aging there is a slowing of information processing speed.
- A slow speed of processing can be seen with TBI.
Brain changes associated with falls in the elderly are more like changes seen in normal aging.

- With aging a decline in memory can be seen but this is normally responsive to cueing.
- With TBI better performance on recognition tasks is seen.
In other words TBI leads to premature brain aging and loss of independence.
Over the past 30 years, research has linked moderate and severe traumatic brain injury to a greater risk of developing Alzheimer's disease or another type of dementia years after the original head injury.

- moderate traumatic brain injury had a 2.3 times greater risk
- severe traumatic brain injury had a 4.5 times greater risk
What are some things that you can do to maintain balance?
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- Take care of your senses
- Use assistive devices
- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Take care of your eyes
- Take care of your ears
- Use assistive devices
- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Take care of your eyes
- Take care of your ears
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- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Vision should be checked at least once a year and eyeglasses should be updated as needed
- Use assistive devices
- Exercise
- Discuss medications with your doctor
• What are some things that you can do to maintain balance?
  • Take care of your senses
  • Use assistive devices
    • Consider getting an evaluation of the home for safety
  • Exercise
  • Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
  - Watch for rugs or other tripping hazards
- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
  - Consider grab bars inside and outside the tub or shower and next to the toilet
- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
  - Consider railing on both sides of stairways
- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
  - Improve the lighting in the home, especially at night
- Exercise
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
- **Exercise**
  - Focus on increasing leg strength and improving balance
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
- **Exercise**
  - Tai Chi may be a good option
- Discuss medications with your doctor

**TABLE 2. Falls information during the 6-month postintervention follow-up.**

<table>
<thead>
<tr>
<th>Falls</th>
<th>Tai Chi (N = 125)</th>
<th>Control (N = 131)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting one fall—N (%)</td>
<td>22 (18)</td>
<td>64 (49)</td>
</tr>
<tr>
<td>Reporting two falls—N (%)</td>
<td>3 (2)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Reporting three falls—N (%)</td>
<td>0</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Total falls reported</td>
<td>28</td>
<td>74</td>
</tr>
</tbody>
</table>

256 subjects were included based on intention-to-treat analysis. Fall data were available for 188 participants (N = 95 in Tai Chi, N = 93 in exercise control) during the 6-month postintervention follow-up. For dropouts, fall status was determined using the last available fall information.
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
- Exercise
  - Tai Chi classes
  - Go4Life
  - SilverSneakers
  - PWR!Gym
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
- **Exercise**
  - Researching opportunities for in-home exercise devices as well as other warning systems to reduce falls
- Discuss medications with your doctor
What are some things that you can do to maintain balance?

- Take care of your senses
- Use assistive devices
- Exercise
- Discuss medications with your doctor
  - More is not always better
Conclusion

- TBI is common in the elderly
- It is associated with falls
- TBI associated with falls can lead to premature brain aging
- Reducing falls through some simple steps can keep the brain younger, longer
RESOURCES

- www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html
- nihseniorhealth.gov/falls/causesandriskfactors/01.html
- www.mayoclinic.org/fall-prevention/art-20047358
THE END
Thank You Supporters…