

SAFE MOBILITY STRATEGIES AND ADAPTIVE EQUIPMENT



JOHNS HOPKINS

M E D I C I N E

PHYSICAL MEDICINE
AND REHABILITATION

Julie Walker
PT, DPT, NCS

Marlena Casey
OTR/L, CLT

DISCLAIMER/ DISCLOSURE

- Please consult with an Occupational Therapist, Physical Therapist, Primary Care Provider, or another health care provider prior to purchasing equipment.
- The Presenters have no disclosures or ties to any of the companies or products presented in the following presentation.

WHY DOES SAFETY MATTER?



WHAT PERCENT OF PATIENTS WITH CEREBELLAR ATAXIA FALL PER YEAR?

A: 57%

B: 74%

C: 46%

D: 83%

Answer:

B: 74%

SAFE STRATEGIES FOR MOBILITY

- ❑ Change Something!!!
 - ❑ With **Yourself**
 - ❑ With the **Strategy** you use
 - ❑ With the **Environment** you are in

WHAT CAN YOU CHANGE ABOUT YOURSELF?

EXERCISE!

Swimming



Stationary Bike



Walking



WHAT CAN YOU CHANGE ABOUT THE STRATEGY?

Plan out your movements



Every time you stand up, stop and get your balance before moving

Quality of Movement not Speed!

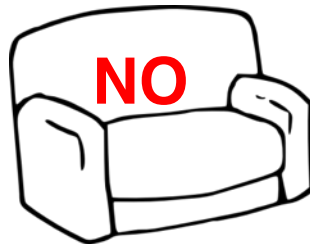
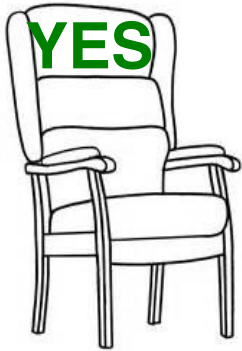


Avoid Multitasking



WHAT CAN YOU CHANGE ABOUT THE ENVIRONMENT?

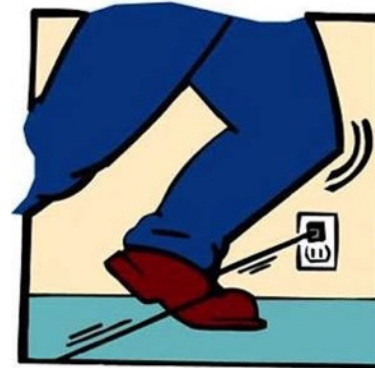
Choose to sit in chairs you know you can get out of



Store frequently used items at waist level



Assess fall hazards



Keep an assistive device available





TUB TRANSFERS



Step 1



Step 2



Step 3

ASSISTED STAND PIVOT TRANSFERS



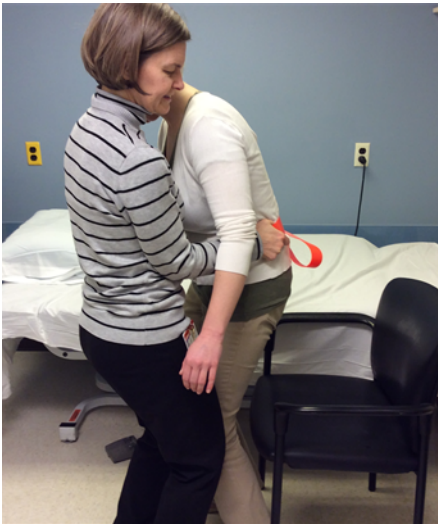
Step 1



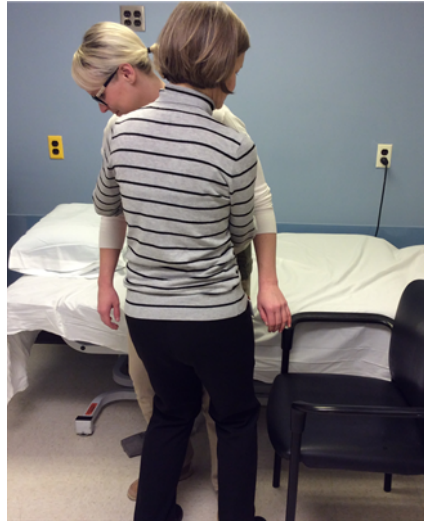
Step 2



Step 3



Step 4



Step 5



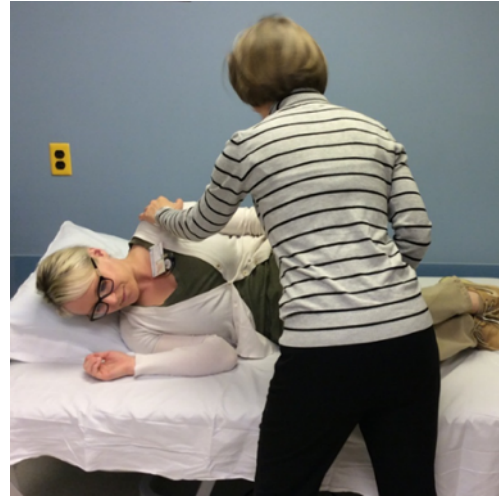
Step 6

ASSISTED BED MOBILITY

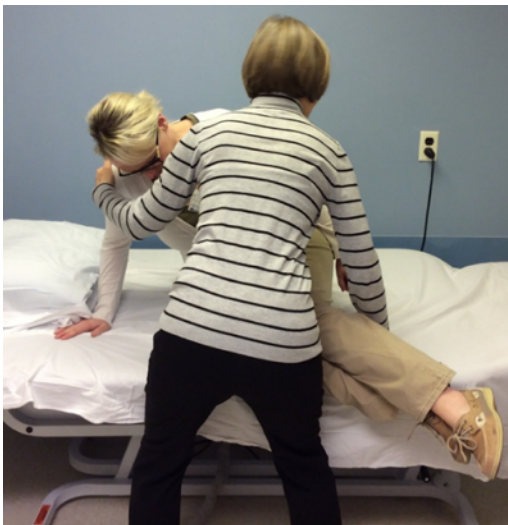
Step 1



Step 2



Step 3



Step 4



TRANSFERS FROM FLOOR

Step 1



Step 2



Step 3



Step 4



Step 5



TRANSFERS IN AND OUT OF CAR



Step 1



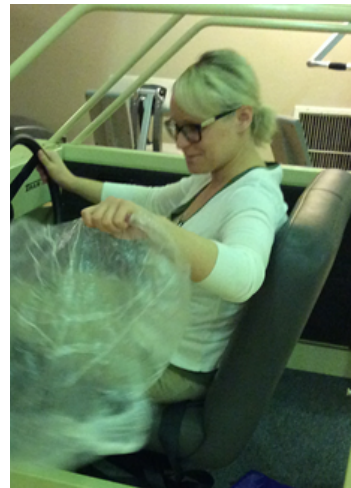
Step 2



Step 3



Step 4



Step 5



Step 6

“Interventions were not aimed at **changing** underlying movement capabilities but instead were focused on **devising strategies** to integrate available movement and control in the most **effective** and **efficient** manner possible.” (Gillen 2002)

ADAPTIVE EQUIPMENT

Adaptive Devices:

- Stabilize
- Control Degrees of Freedom
- Decrease falls risk
- Energy Conservation

Assistive Technology:

- Tremor dampening
- Communication Devices

EATING



Weighted Utensils



Plate Guard



Cuff Silverware



Dycem



Rocker Knife

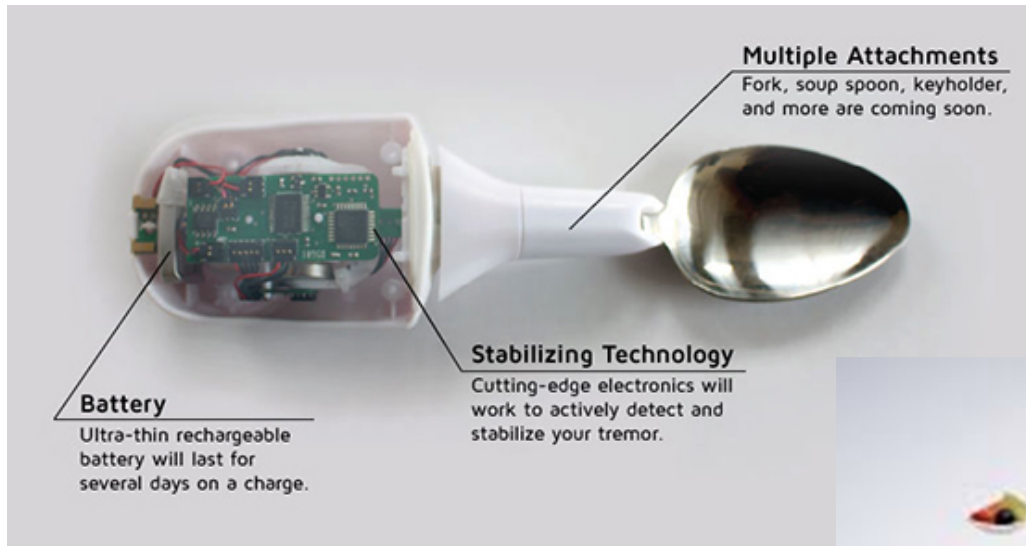


Adapted Cutting Board

EATING

1. Weighted Utensils
2. Plate Guard
3. Cuff Silverware
4. Dycem
5. Rocker Knife
6. Adapted Cutting Board

ASSISTIVE TECHNOLOGY EATING EQUIPMENT



Obi Robotic
Feeding Device
<https://meetobi.com>

Lifeware Spoon

- Active Cancellation of Tremor technology to stabilize an eating utensil

(Pathak et al 2014) www.liftware.com



KITCHEN DEVICES



Robotwist Hands
Free Jar Opener



Pot/Pan Stabilizer



Cordless Can Opener



Bottom-
Drawer
Freezer
Refrigerator

Side Hinge
Oven Door



KITCHEN DEVICES

1. Robotwist Hands Free Jar Opener
2. Pot/Pan Stabilizer
3. Cordless Can Opener
4. Bottom-Drawer Freezer Style Refrigerator
5. Side Hinge Oven Door

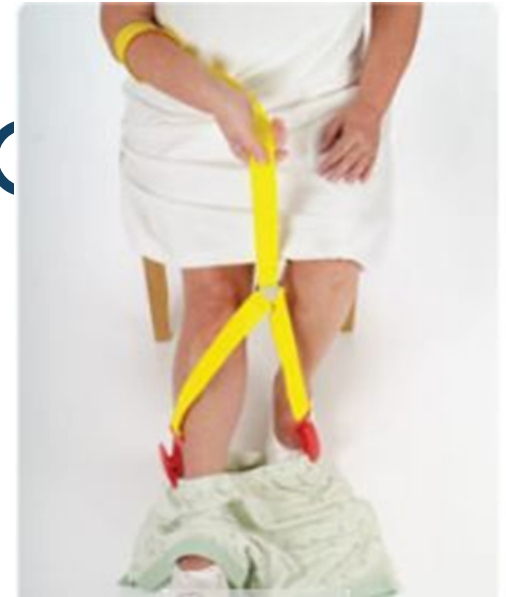
LOWER BODY DRESSING



Sock Aide



Reacher



Clip and Pull Dressing Aid



Elastic Shoelaces/Coilers



Dressing Stick



Long Handled Shoe Horn

LOWER BODY DRESSING

1. Sock Aide
2. Reacher
3. Clip and Pull Dressing Aid
4. Elastic shoelaces/coilers
5. Dressing Stick
6. Long Handled Shoe Horn

UPPER BODY DRESSING



Button Hook



One Arm Dressing Technique

Zipper Pull



Front Latching Bra



UPPER BODY DRESSING

1. Button Hook
2. One arm dressing technique
3. Zipper Pull
4. Front Latching Bra

BATHING



Soap on a Rope



Foot Brush



Wash Mitt



Long Handled
Sponge



Removable Shower
Head



Shower Chair

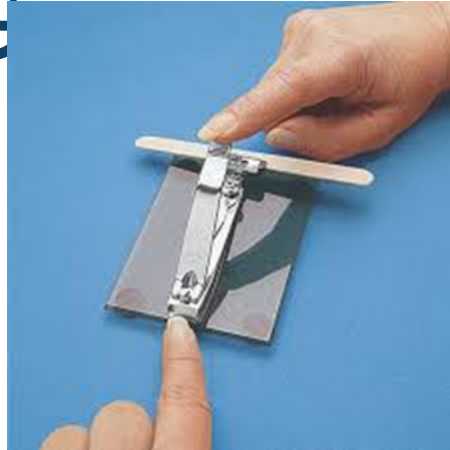
BATHING

1. Soap on a Rope
2. Foot Brush
3. Wash Mitt
4. Long Handled Sponge
5. Removable Shower Head
6. Shower Chair

GROOMING



Weighted
Razor and
Toothbrush



One Handed Nail Clippers



Electric Toothbrush



Denture Brush



Long Handled Brush and Comb

Height
Adjusted
Hair Dryer
Stand



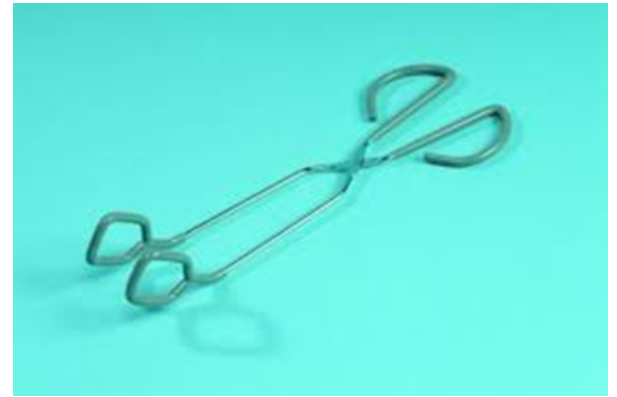
GROOMING

1. Weighted Razor and Toothbrush
2. One Handed Nail Clippers
3. Electric Toothbrush
4. Denture Brush
5. Long handled brush and comb
6. Height adjusted hair dryer stand

TOILETING



Toilet Buddy



Tongs



Raised Toilet Seat

WHERE TO BUY THINGS

□ Amazon

□ <https://www.amazon.com/>

□ Northern Pharmacy

□ <https://www.northernpharmacy.com/Durable-Medical-Equipment>

□ NC Medical

□ https://www.ncmedical.com/categories/Assistive-Devices-ADL_12839533.html

□ Alimed

□ <http://www.alimed.com/adls/>

Questions?



JOHNS HOPKINS
MEDICINE

ATAXIA CENTER



REFERENCES

- Bastian AJ. Learning to predict the future: the cerebellum adapts feedforward movement control. *Curr Opin Neurobiol* 2006, 16(6): 645-649.
- Ilg W, Synofzik M, Brotz D, Burkard S, Giese MA, Schols L. Intensive coordinative training improves motor performance in degenerative cerebellar disease. *Neurol* 2009; 79 (20):2056-2060.
- Keller JL, Bastian AJ. A home balance exercise program improves walking in people with cerebellar ataxia. *Neurorehabilitation and Neural Repair*. 2014; 28(8): 770-778.
- Morton SM, Bastian AJ. Relative contributions of balance and voluntary leg-coordination deficits to cerebellar gait ataxia. *J Neurophysiol* 2003; 89(4): 1844-1856.
- Morton SM, Bastian AJ. Cerebellar control of balance and locomotion. *Neuroscientist* 2004; June (10): 247-59.
- Therrien AS, Wolpert DM, Bastian AJ. Effective reinforcement learning following cerebellar damage requires a balance between exploration and motor noise. *Brain* 2016, 139(1):101-14.
- Pathak A., Redmond JA, Allen M, Chou KL. A Non-Invasive Handheld Assistive Device to Accommodate Essential Tremor: A pilot study. *Mov Disord*. 2014;29(6):838-842.
- Fonteyn et al. Falls in Spinocerebellar Ataxias: Results of the Euro SCA Fall Study. *Cerebellum*. 2010;9:232-239
- Gillen G. Improving Mobility and Community access in an adult with ataxia. *American Journal of Occupational Therapy*. 2002;56(4)462-466.