

# Adaptive Equipment and Energy Conservation Techniques During Performance of Activities of Daily Living

**Problem:** A wide range of diagnosis can affect the performance of activities of daily living (ADLs). The performance of these activities; feeding, dressing, and bathing to name a few are an essential part of our daily lives. An individual's ability to function in daily activities is often dependent on physical and cognitive health. The use of adaptive equipment and energy conservation techniques can make all the difference in making these important daily tasks possible and effect one's perception and quality of their life.

## Adaptive Equipment

Adaptive equipment is used to improve functional capabilities. Adaptations can assist someone in their home or out in the community, ranging from longer, thicker handles on brushes and silver wear for making them easier to grasp to a powered wheelchair. Below is a chart including various diagnosis and examples of adaptive equipment that could greatly benefit individuals experiencing similar circumstances. The equipment listed will promote functional independence as well as safety during performance of ADLs.

Diagnosis	Adaptive Equipment	Rationale for Equipment	Price Range	Website/Resource Link to Purchase Equipment
<p style="text-align: center;"><b>Joint Replacement (THA/TKR)</b></p>	<p>Reacher</p> 	<p>This assistive device can help in accessing spaces that may be hard for the individual to reach otherwise. Frequent sitting and standing (bending more than 90 degrees) are not recommended for individuals with a recent joint replacement. This tool will allow the individual to grasp an object further away without movement of lower extremities.</p>	<p>\$5.50 - \$330.00</p>	<p><a href="https://www.healthproductsforyou.com/p-featherlite-reacher.html">https://www.healthproductsforyou.com/p-featherlite-reacher.html</a></p> 

	<p><b>Sock aid</b></p>	<p>After having a joint replacement, it is very important to limit a large range of motion at the hip/knee. Putting on socks requires bending and reaching, however, using a sock aid can greatly limit the range of motion required when performing this task; sliding the sock over the sock aid and lowering it to the floor using attached ropes. Sock aids can greatly ease dressing tasks after a joint replacement.</p>	<p>\$7.00 - \$55.00</p>	<p><a href="https://www.healthproductsforyou.com/p-adult-wide-style-sock-aid.html">https://www.healthproductsforyou.com/p-adult-wide-style-sock-aid.html</a></p> 
	<p><b>Long handled shoehorn</b></p>	<p>Many times, when putting shoes on it is convenient to bring your foot closer to you to make the task easier, however, after a joint replacement, it is recommended to avoid stepping backwards, crossing your legs, or bending more than 90 degrees at the joint. A long-handled shoehorn is medically necessary to ensure unnecessary movements are minimal.</p>	<p>\$1.50 - \$24.00</p>	<p><a href="https://www.healthproductsforyou.com/p-complete-medical-get-your-shoe-on-plastic-shoehorn.html">https://www.healthproductsforyou.com/p-complete-medical-get-your-shoe-on-plastic-shoehorn.html</a></p> 
	<p><b>Raised toilet seat</b></p>	<p>Minimizing bending the operated joint is extremely important after having a joint replacement surgery. Using adaptive equipment to limit range of motion at the hip/knee will allow for adequate time for healing and reduce risk of injury.</p>	<p>\$20.00 - \$300.00</p>	<p><a href="https://www.healthproductsforyou.com/p-drive-premium-seat-rizer-with-removable-arms.html">https://www.healthproductsforyou.com/p-drive-premium-seat-rizer-with-removable-arms.html</a></p>

	<p><b>Bathroom grab bars</b></p> 	<p>This assistive device can provide support and stability for an individual after a joint replacement. Maintaining balance during bathing by using grab bars with textured handles will greatly increase safety and decrease fall risks on slippery surfaces.</p>	<p>\$20.00 - \$150.00</p>	<p><a href="https://www.healthproductsforyou.com/p-carex-textured-wall-grab-bars.html">https://www.healthproductsforyou.com/p-carex-textured-wall-grab-bars.html</a></p> 
<p><b>Unsteady Gait</b></p>	<p><b>Tub transfer bench</b></p> 	<p>Shaking and poor balance are common symptoms of Parkinson's disease, **** . Individuals who easily have loss of balance need extra support to compensate for the energy that is constantly being used during tremors and shaking. A tub transfer bench will provide the additional support that is necessary during bathing.</p>	<p>\$30.00 - \$3,700.00</p>	<p><a href="https://www.healthproductsforyou.com/p-lumex-imperial-collection-transfer-bench.html">https://www.healthproductsforyou.com/p-lumex-imperial-collection-transfer-bench.html</a></p>
	<p><b>Walker</b></p> 	<p>A walker can have a profound effect on stability for individuals with walking difficulties. Stiffness is often another common symptom that occurs with unsteady walking, making this assistive device medically necessary. A walker can act as a support for functional mobility while greatly increasing safety.</p>	<p>\$45.00 - \$500.00</p>	<p><a href="https://www.healthproductsforyou.com/p-graham-field-lumex-two-button-adult-folding-steel-walker.html">https://www.healthproductsforyou.com/p-graham-field-lumex-two-button-adult-folding-steel-walker.html</a></p>
<p><b>Tremors</b></p>	<p><b>Weighted utensils</b></p> 	<p>The heaviness of weighted utensils reduces the effect of tremors by steadying the hand. Also help with lack of coordination by providing more sensory feedback. Significantly smoother movements make it easier to scoop up food and bring it to the mouth. This assistive device is medically necessary during self-feeding for someone with tremors.</p>	<p>\$3.00 - \$22.00</p>	<p><a href="https://www.healthproductsforyou.com/p-adjustable-weighted-utensils.html">https://www.healthproductsforyou.com/p-adjustable-weighted-utensils.html</a></p>

	<p>Scoop dish</p> 	<p>Tremors can have a profound impact on coordination and control of the arms and hands. A scoop dish can be used to avoid food being pushed off the edge of the bowl and prevent spills during feeding and eating. This adaptive equipment is important for feeding to be an independent task.</p>	<p>\$6.00 - \$40.00</p>	<p><a href="https://www.healthproductsforyou.com/p-bl-scoopy-scoop-dish-plate.html">https://www.healthproductsforyou.com/p-bl-scoopy-scoop-dish-plate.html</a></p>
<p><b>Chronic, progressive illness</b></p>	<p>Power wheelchair</p> 	<p>An electric wheelchair is an assistive device that can give the individual a sense of independence when complications increase. Electric wheelchairs are highly adjustable to patients' specific needs and can assist with pressure relief, postural alignment, sitting tolerance, and independent repositioning. This adaptive device will increase independence and safety. A power wheelchair is capable of adjusting to specific needs of the individual, making it a medical necessity.</p>	<p>\$1,700.00 - \$19,638.00</p>	<p><a href="https://www.healthproductsforyou.com/p-golden-tech-alante-power-wheelchair.html">https://www.healthproductsforyou.com/p-golden-tech-alante-power-wheelchair.html</a></p>
	<p>Ramp</p> 	<p>Progressive muscle weakness and paralysis are symptoms that are sometimes seen at end stages of debilitating illnesses. A ramp is an assistive device which is often placed over stairs or uneven surfaces. A ramp is medically necessary to allow an individual using a wheelchair to get in and out of their home.</p>	<p>\$30.00 - \$500.00</p>	<p><a href="https://www.healthproductsforyou.com/p-pvi-portable-mutlifold-ramp.html">https://www.healthproductsforyou.com/p-pvi-portable-mutlifold-ramp.html</a></p>

	<p><b>Hospital bed</b></p> 	<p>Treatment options are often limited for progressive diseases, making the comfort and safety of the patient a top priority. Without a hospital bed there is an increase for complications to arise such as bedsores, thrombosis, pneumonia (due to lack of upright position), UTI, and osteoporosis, making a hospital bed necessary for a chronic, progressive disease.</p>	<p>\$50.00 - \$1,500.00</p>	<p><a href="https://www.healthproductsforyou.com/p-graham-field-patriot-hospital-bed.html">https://www.healthproductsforyou.com/p-graham-field-patriot-hospital-bed.html</a></p>
<p><b>Arthritis</b></p>	<p><b>Electric can opener</b></p> 	<p>An electric can opener can make it both safer and easier for getting the lid off a can. By using this assistive device an individual with arthritis will avoid putting the extra tension and stress on their bones. It is medically necessary to prevent exacerbations and discomfort, which cause intense stiffness and discomfort in the joints.</p>	<p>\$25.00 - \$57.50</p>	<p><a href="https://www.healthproductsforyou.com/p-black-surecut-electric-can-opener.html">https://www.healthproductsforyou.com/p-black-surecut-electric-can-opener.html</a></p>
	<p><b>Long-handled sponge</b></p> 	<p>This assistive device will limit the need to reach when bathing. Arthritis symptoms including joint stiffness, pain, and inflammation make the long-handled sponge is medically necessary to support independent grooming and bathing for an individual with a limited range of motion.</p>	<p>\$3.50 - \$31.00</p>	<p><a href="https://www.healthproductsforyou.com/p-complete-medical-i-got-your-back-long-handle-round-sponge.html">https://www.healthproductsforyou.com/p-complete-medical-i-got-your-back-long-handle-round-sponge.html</a></p> 
	<p><b>Rocker knife with built up handle</b></p> 	<p>The rocker knife requires less pressure than a regular utensil when cutting food, the built-up handle will add less stress on inflamed or weak joints. Arthritis is especially prevalent in the hands and fingers; this assistive device is medically necessary for self-feeding and independence.</p>	<p>\$3.00 - \$24.00</p>	<p><a href="https://www.healthproductsforyou.com/p-essential-medical-rocker-knife-with-large-handle.html">https://www.healthproductsforyou.com/p-essential-medical-rocker-knife-with-large-handle.html</a></p> 

<p><b>Low Visual Acuity</b></p>	<p><b>Contrast tape</b></p> 	<p>Outlining edges of counter tops, steps, coffee tables, doorways, and bathtubs/showers with blue tape makes them easier to distinguish. Without contrasts, the likeliness of falls and accidents are increased. Contrast tape is medically necessary to ensure safety of individuals with decreased visual acuity.</p>	<p>\$19.95 - \$75.00</p>	<p><a href="https://www.maxiaids.com/low-vision-reflective-tape-black-and-yellow-striped">https://www.maxiaids.com/low-vision-reflective-tape-black-and-yellow-striped</a></p> 
	<p><b>Bump dot stickers</b></p> 	<p>This adaptive tool will give the individual tactile cues to hit appropriate buttons when using the microwave, oven, stove, remote, or phone in their home. Without these stickers, turning on the wrong burner on the stove or setting the temperature too high on the oven is much more likely, making them medically necessary for safety.</p>	<p>\$10.00 - \$30.00</p>	<p><a href="https://www.amazon.com/Mixed-Bump-Dots-Sizes-Colors/dp/B00115TM6W">https://www.amazon.com/Mixed-Bump-Dots-Sizes-Colors/dp/B00115TM6W</a></p> 
	<p><b>Portable electric magnifier</b></p> 	<p>A portable electric magnifier will allow the individual to read labels, prescriptions, and appointment dates. This device can be used easily in the home by either laying it flat over the surface and sliding it along to read or slide camera over the text with the screen set up behind the material being read and read off the device screen.</p>	<p>\$200.00 - \$500.00</p>	<p><a href="https://www.healthproductsforyou.com/p-bierley-shoppa-portable-electronic-magnifier.html">https://www.healthproductsforyou.com/p-bierley-shoppa-portable-electronic-magnifier.html</a></p>

## Energy Conservation

Energy conservation techniques is a less physical way of adapting the way daily activities within the environment. Making simple adjustments to daily routines can improve energy efficiency, and ultimately conserve energy throughout the day. Energy conservation techniques can be applied to any aspect of life; at home, work, leisure, and even rest/sleep. The 6 P's below are important to keep in mind to help conserve energy.

### Energy Conservation Techniques - 6 P's

1. **Prioritize**: Set realistic goals and prioritize daily activities

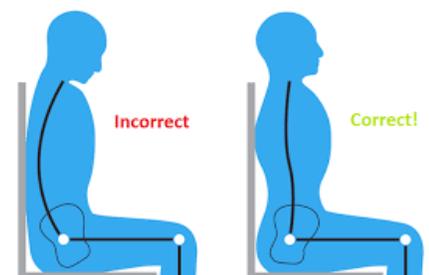


2. **Plan**: Break down task into stages

3. **Positioning**: Sit down and take rest breaks, avoid prolonged movements and tiring posture.

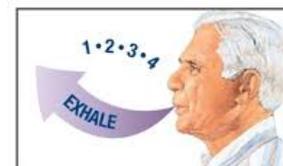
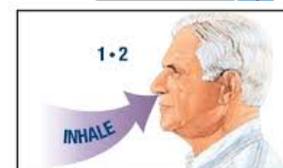


4. **Pace yourself**: Allow extra time to complete an activity and don't rush



5. **Positive attitude**: Concentrate on all the things you can do

6. **Pursed lip breathing**: Inhale through nose, exhale through mouth



<https://www.bfwh.nhs.uk/wp-content/uploads/2018/02/PL721.pdf>

The areas of feeding, dressing, and bathing are assessed as examples of applying ideas of energy conservation techniques to everyday life:

### *Eating & Feeding*

- Plan ahead and avoid rushing
- Schedule meal prepping throughout the week
- Organize grocery list by aisle
- Shop at less busy times
- Sit when preparing meals
- Make use of electrical appliances; blender, dishwasher, etc.
- Use grocery cart for support



<https://www.ucsfhealth.org/education/tips-for-conserving-your-energy>

### *Dressing*

- Lay out clothes before getting dressed
- Sit down to dress and undress
- Minimize leaning over to get dressed. Bring foot up next to you to get socks on, fasten bra in front then turn it to the back.
- Consider the type of clothing; a t-shirt instead of a button up or pants with an elastic band instead of buttons



### *Bathing*

- Use a shower organizer to decrease reaching
- Make use of electrical tools; toothbrushes, shavers, etc.
- Toothbrush with built up handle
- Sit during bathing and take rest breaks



<https://www.detroitseiorsolution.org/meals-on-wheels-mow>

# *Solutions for bathing with low endurance*

Bathing at regular intervals (at least 1-2 times per week) is necessary for seniors to maintain skin integrity, reduce the risk for skin breakdown and infections, eliminate body odor and to maintain hygiene. Biological aging is associated with declines in neuromuscular and cardiovascular systems, and this can impact activities of daily living (ADLs) due to an impaired capacity for work (Cadore et al., 2014). Low endurance can be exacerbated by cardiopulmonary or cardiovascular disease, cancer, autoimmune diseases, and other unspecified etiologies.

Participation in ADLs such as bathing can be limited or require assistance from a caregiver to complete due to many factors including decreased endurance. An estimated 2% of the adult population requires some assistance to complete ADLs, with 12% of adults over 75 requiring assistance (Adams et al., 2012). The lifetime probability of experiencing a disability in at least 2 ADL areas is as high as 68% for people over the age of 65 (Adams et al., 2012).

The following information can assist to maximize independence with showering and bathing to minimize the physical effort required.

## *Assistive devices*

**Shower chair and handheld shower head.** Remaining seated on the bench while showering will reduce the overall effort required for showering.



<https://www.youtube.com/watch?v=KXCPlrQ682c>

**Long handled sponge** will reduce the overall effort by requiring less bending and reaching to efficiently and effectively wash all areas of your body



<https://www.youtube.com/watch?v=Iar-gwBeVGA>

## *Activity modifications*

**-Reduce standing time:** sitting requires less energy so complete as much of the bathing activity while seated as possible including undressing, drying off, dressing,

**-Keep items within reach:** utilize ledges in shower or install shelving in shower to store supplies such as shampoo, soap and conditioner. Keep your towel and any other necessary supplies within reach so you can remain sitting to retrieve them.

**-Temperature:** heat can exacerbate fatigue, reducing the temperature of the water can help you conserve energy for other bathing tasks

## *Impact on Occupation*

Implementing these energy saving modifications can help you to maximize your independence and safety with bathing tasks.

Example: An older individual who lives alone may be unable to safely bathe themselves due to low endurance. Utilizing the shower chair along with other modifications will allow this person to safely and effectively complete the bathing task on their own without the assistance of a caregiver.

## *Safety*

Safety is the number one concern during bathing activities. If you feel unsteady, have had a recent fall or loss of consciousness please consult your primary care physician prior to implementing any new techniques.

## *Consult*

If your cause for low endurance is unknown, discuss it with your primary care physician to make sure it is not something more serious. Speak to your primary care provider about any additional challenges low endurance may cause and request an occupational therapy home evaluation to learn more energy conservation techniques.

## *Community resources*

-Find a handyman to install handheld shower head, shower seat, shower shelving and other ageing in place essentials: <https://handymanconnection.com/>

-Loan closet to get equipment at low or no cost <https://loanclosets.org/michigan/wayne>

-Purchase equipment: [http://www.binsons.com/site\\_search.html](http://www.binsons.com/site_search.html) and search for desired item

### References:

Adams, P. F., Kirzinger, W. K., Martinez, M. E. (2012) Summary health statistics for the U.S. population: National health interview survey, 2011. *Vital Health Statistics, (10)255*, 1-110.

Cadore, E. L., Pinto, R. S., Bottaro, M., & Izquierdo, M. (2014). Strength and endurance training prescription in healthy and frail elderly. *Aging and Disease, 5(3)*, 183-195.

## Resources

*Meals on Wheels:* An alternative option for meal prepping and cooking at home is having healthy meals brought right to seniors' homes fully prepared!

<https://www.detroit seniorsolution.org/meals-on-wheels-mow>

*HelloFresh:* A service such as Hello Fresh, if able to prepare their meal at home. This can be helpful in ensuring the quality of their meals and eliminate the task of grocery shopping and having unhealthy choices. Both Meals on Wheels and Hello Fresh are examples of energy conservation techniques for meals.

*Michigan Assistive Technology Program (MATP):* This program works with other organizations in Michigan to provide demonstrations to people who have disabilities to help to compare and contrast adaptive equipment options, so they are able to make informed decisions.

<https://navigator.autismallianceofmichigan.org/item/michigan-assistive-technology-project/>

*Online Tools* - <https://atxchange.org/> : An online site people can donate or sell adaptive equipment of all kinds (provided through MATP). Equipment ranging from power wheelchairs to computer monitors and software are available.

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## Further Professional Assistance

Dementia is a progressive disease and staying physically active has a big impact on the well-being of the individual experiencing dementia. Physical, occupational, and recreational could greatly benefit someone with a physical disability.

**-Physical therapy:** Increase strength, endurance, and safety for the individual; making a daily exercise program and providing specialized care.

**-Occupational therapy:** Help in assisting in ADLs and provide continuous support with compensatory strategies and adaptive equipment, including those listed above, to increase meaningful activities quality of life overall. Feeding and eating can also be assessed if swallowing issues are present.

**-Recreational therapy:** Provide leisure and recreational activities for the individual as well as assist in identifying leisure pursuits and hobbies to promote physical activity.



## Improving Occupational Engagement – Further Considerations

Treatment approaches relating to adaptive equipment and compensatory technique strategies can be applied to anyone's daily life to make a task easier. If a client had a physical disability such as limited range of motion both adaptive equipment and compensatory strategies could be very useful. For example, after a hip surgery using an elevated toilet seat or shower chair for safety and to avoid falls could be very beneficial. Energy conservation techniques that could be used would be to sit down during dressing activities and take their time completing daily tasks.

An individual's ability to function in daily activities is often dependent on physical and cognitive health. Finding personal strategies within the environment to conserve energy paired with the use of necessary adaptive equipment can make all the difference in making these important daily tasks possible and effect one's perception and quality of their life.

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## Age-related Changes Related to Adaptive Equipment and Energy Conservation Affecting Occupational Performance

- *Reaction time*: Slower thinking process and body movements.
  - *Proprioception*: Potential postural instability and falls; changes in joint-position sense during movement.
  - *Balance*: Postural control is disturbed by changes in sensory, motor, and central nervous system function, and affected by a decrease in sensory cues and reflexes.
  - *Dizziness*: This is the most frequent complaint of older adults over 75 years old. Being dizzy occurs due to lack of coordination or integration of movement within the sensory system.
  - *Motor activity*: Posture, movement, gait, and reflexes are altered with aging.
  - *Orthostatic hypotension*: Change in position from laying down to standing causes a decrease in blood pressure, causing feelings of dizziness or fainting. This condition is typically caused by lack of blood to the brain resulting in pooling of blood in the lower extremities.
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## References

- Barney, K. F., Emerita, C., & Perkinson, M. A. (2018). Cognitive Impairment, Dementia, and Occupational Therapy Interventions. Kempf, C., Schwarz, L. R., Desai, A. K., Perkinson, M. A. (Eds.), *Occupational therapy with aging adults: Promoting quality of life through collaborative practice*. (pp. 245–265). Elsevier.
- Online Home Healthcare and Healthy Living. (n.d.). Retrieved from <https://www.healthproductsforyou.com/>