

Air Travel With a Wheelchair: Occupational Therapy's Role in Facilitating Successful Flights

Jessica Presperin Pedersen, OTD, MBA, ATP/SMS, FAOTA, RESNA Fellow

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ABSTRACT

A person who uses a wheelchair when traveling by air may encounter barriers during ticketing; navigating the airport, including going through security checkpoints; transferring from the wheelchair to the aircraft seat; and having the wheelchair delayed, lost, or damaged at the arrival point. This article will provide occupational therapy practitioners with information and ideas to facilitate successful air travel.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Identify two common problems air travelers with wheelchairs have reported.
2. Describe two changes provided by the Air Carrier Amendments Act, which passed in 2018.
3. Explain what information about power wheelchairs is helpful to provide during the online ticket reservations process.
4. Explain why knowing the type of aircraft being used for the flight is crucial when stowing a power wheelchair.
5. Describe how "boarding chairs" are used at the terminal.
6. Identify equipment that may be used when sitting on the aircraft seat to decrease pressure or provide postural support.
7. Describe ways to protect a power wheelchair during a flight.

INTRODUCTION

A little more than 100 years after the first flight made by Wilbur and Orville Wright, in 1903, air travel is a commonplace experience, with more than 4 billion passengers flying worldwide every year on scheduled airline services (International Air Transport

Association, 2018). The Open Doors Organization, a nonprofit organization focused on travel and tourism for people with disabilities, found that in 2015, U.S. adults with disabilities spent more than \$17 billion on their travel (Walton, 2019). Participation in air travel for people who use wheelchairs is at an all-time high. The process, however, is often difficult to navigate, with reported problems occurring during reservations, Transportation Security Administration (TSA) checks, boarding, sitting in the aircraft, and stowing wheelchairs (Presperin Pedersen et al., 2016, 2019).

The U.S. Department of Transportation now requires airlines to report lost, damaged, delayed, or stolen wheelchairs and scooters (Paralyzed Veterans of America, 2018), and during the first reporting data from January 2019 to September 2019, U.S. carriers mishandled at least 7,747 wheelchair or scooters (Fraser, 2019).

Occupational therapy practitioners have the opportunity to assist wheelchair users in this process by providing education and hands-on experiences, and guiding individuals and their families as they plan air travel. This article provides practitioners with information pertaining to legislation governing air travel for people with disabilities; the reservation process; getting through the airport to the terminal, including TSA; transferring onto a boarding chair and entering the aircraft; directing care for equipment; and protecting wheelchairs for stowage in the underbelly of the aircraft.

EVIDENCE

Presperin Pedersen and colleagues (2019) surveyed 695 participants ages 18 to 75 years who used wheelchairs for air travel. The results of the 78-question survey showed that 56% stated they did not fly because of a lack of access to a lavatory, and more than 60% were fearful that damage would occur to their wheelchair. Of those who used a boarding chair to access the cabin, 55% found it unstable, 48% had their feet fall off the

chair, 11% tipped sideways, and 8% fell off the chair. When sitting on the aircraft during the flight, 70% stated they could not access the lavatory, 26% experienced skin pressure issues, 45% experienced pain, 20% were injured by a cart going down the aisle, 10% slipped forward in the seat, and 14% experienced their legs dangling.

Of the 91% of individuals who had their wheelchairs stored in the underbelly of the aircraft, 44% believed the handler did not know how to manage the wheelchair, 15% experienced loss, and 57% experienced damage (Presperin Pedersen et al., 2019).

The results of this research led to the formation of the RESNA Assistive Technology for Air Travel Committee (<https://bit.ly/38I8Gmn>), which is composed of airlines, consumer organizations, therapists, researchers, engineers, and wheelchair manufacturers. The purpose is to standardize ticketing procedures, tagging of wheelchairs, and stowage methods, and to incorporate design ideas for aircraft-friendly wheelchairs.

LEGISLATION

The Air Carrier Access Act was signed into law in 1986, 4 years before the Americans With Disabilities Act. It provides rights for people with disabilities who fly on commercial airlines owned by companies in the United States. Provisions were included for people with decreased ambulation abilities. The airlines must assist with boarding and un-boarding passengers who may need assistance. The primary wheelchair and medical supplies are exempt from luggage fees. Ventilators and respirators are allowed to be used in the cabin of the aircraft. A complaint resolution officer should be available to handle any issues that arise. In 2018, the Air Carrier Amendment Act (ACAA) was included in the Federal Aviation Administrative Reauthorization Act.

Tammy Duckworth, a U.S. Senator from Illinois who uses a manual wheelchair because of lower limb amputations as a wounded warrior, helped pass the ACAA. She used her own story about her wheelchair being damaged during a commercial flight as well as several other stories from people throughout the country with various motor, sensory, cognitive, and mental health impairments.

As Duckworth noted in an interview, “The airlines do break wheelchairs on a regular basis, and unlike losing your luggage—you can go out and buy new luggage—my wheels are my legs. You can’t find a substitute for my wheelchair” (Park, 2018).

Changes from the Air Carrier Access Act to the Amended ACAA include:

- Creating a Bill of Rights
- Changes in TSA procedures to include agent training and same-gender screening
- Civil penalties resulting from harm to the passenger or equipment
- Mandatory transparency from airlines regarding damage or loss of mobility equipment
- A study on the possibility of being able to fly seated in one’s own wheelchair
- Evaluation of airline and airport training policies. (Paralyzed Veterans of America, 2018)

PERSONNEL INVOLVED IN AIR TRAVEL

Online/phone staff: The staff online and on the phone for various airlines answer questions and assist with airline reservations. Travelers should purchase the tickets online and use the drop-down windows to provide information about needed assistance and any equipment going on the aircraft. A phone call 48 hours before the flight provides a verbal alert to the airlines regarding assistance needed and equipment being transported on the flight.

Airport ticketing agents: The airline ticket agents are at the airport to enable purchase or exchange of airline tickets, assist with getting a boarding pass, and check luggage. They can ensure that the transport crew is ready if a wheelchair is needed or if assistance is needed getting through TSA. They can also contact the below-the-wing crew to let them know what equipment is being transported.

Transport/transfer crew: Most U.S. airlines contract with local companies to provide wheelchairs/boarding devices and transfer assist. In 2019, United Airlines decided to hire its own transport staff at major cities. Personnel from the transport companies will meet the individual at a designated place for people with disabilities or at the ticket counter, depending on the airport. They provide wheelchairs or transport chairs to push the person to the terminal. They will assist with going through TSA. They also provide the hands-on transfer assist to the boarding chair/aisle chair that will go onto the aircraft, and will provide transfer assist and lifts to get the traveler into the aircraft seat.

TSA staff: TSA is a division of the U.S. Department of Homeland Security. Employees of TSA screen passengers and luggage boarding the plane to prevent items not allowed in the cabin from getting through the security lines. There is a separate process for individuals who use wheelchairs or who, because of medical reasons, are not able to go through the electronic scanning stations.

Above-the-wing crew: This crew is the flight attendants, pilots, and airline staff who are present at the terminal/gate to take tickets, ensure passenger safety and comfort during the flight, and fly the plane.

Below-the-wing crew: This crew is responsible for baggage that is going in the underbelly of the aircraft. This includes checked luggage as well as anything left on the Jetway. They often have to lift a wheelchair onto the conveyor belt. It is imperative that they know the weight of the wheelchair, because there is a weight-per-square foot mandate to ensure that the weight of the aircraft is balanced. The below-the-wing crew needs to know how to manually push the wheelchair from the Jetway and lock it in place in the cargo hold. They also need to know which part of the wheelchair frame they should hold when they lift it onto the conveyor belt.

ONLINE TICKETING

Making online reservations can be very helpful for the person who uses the wheelchair if the correct drop downs are used.

Most airlines have a section that can be filled out indicating what type of assistance is needed and what equipment is going to be transported on the flight. This information, as well as a call 48 hours before the flight, can prepare the airline personnel for ensuring the traveler receives the appropriate support and accommodations for the flight. The drop down will ask whether physical assistance is needed. It can indicate to the airline personnel whether the person traveling needs an airport wheelchair or will use their own wheelchair to get to the gate. This information cues the airline about what staff and equipment are needed to get the passenger to the terminal and onto the aircraft seat.

The information pertaining to the type of equipment to be stowed can provide the below-the-wing crew with information such as:

- Make and model of the wheelchair
- Weight and dimensions
- Whether the power wheelchair can fold (Some power wheelchairs allow the backrest to fold down onto the seat, decreasing their height. Some wheelchairs can also be placed in a tilt or recline electronically so they can be made smaller to get into the cargo hold.)
- What parts of the wheelchair can be removed and brought into the cabin of the aircraft to decrease the potential for loss or damage

Table 1. Special Service Request Codes Assigned by Airlines

WCHR	Wheelchair assistance required: do not have wheelchair, require a wheelchair to get to terminal, passenger can walk short distance up or down stairs
WCHS	Wheelchair assistance required: do not have wheelchair, require a wheelchair to get to terminal, passenger can walk short distance, but not up or down stairs
WCHC	Have own wheelchair; passenger cannot walk any distance and will require the aisle chair/boarding device to get to cabin seat
WCMP	Passenger is traveling with a manual wheelchair
WCBD	Passenger is traveling with a dry cell battery-powered wheelchair
WCBW	Passenger is traveling with a wet cell battery-powered wheelchair
WCLB	Passenger is traveling with a lithium battery

- How the wheels can be released to allow a power wheelchair to be manually propelled
- What type of batteries are on the device.

It is a good idea to print out the drop-down form provided by the airline to be used as an identifying tag for the wheelchair. The printout might be placed in a plastic page protector or laminated and attached to the wheelchair. Although the electronic information is helpful to airline personnel sitting in front of a computer, a print-out attached to the wheelchair can be seen immediately by the below-the-wing crew during transit, providing helpful details. Figure 1 is a wheelchair tag that anyone using a wheelchair can use during air travel. A picture of the wheelchair can be downloaded onto the form to indicate where the wheel release is located. Airlines throughout the U.S. use Special Service Request Codes, which provide details for people requesting help with airport transport to the terminal, boarding, or transporting a wheelchair (see Table 1).

Batteries: The airline is required to document the type of batteries used on the wheelchair (International Air Transportation Association, 2019). Gel/dry cell batteries, which most power wheelchairs use, do not have to be removed from the wheelchair. If an acid/wet cell or lithium battery is used, it must be removed from the wheelchair. All lithium batteries must be stored in a protective case in the cabin of the aircraft. Many of the power assist devices use a lithium battery (see Figure 2). The pilot must be aware of all batteries being transported on the flight. The maximum watt hours of a lithium battery allowed on the flight is 300.

48-hour notice: It is advisable to call the airlines 48 hours before the flight to reiterate the information provided when the reservations were made. This verbal alert lets the airlines know the flight number, what assistance is needed, and what equipment will be boarded. This allows the airline to make arrangements for wheelchair transporters to be available, identify the

Figure 1. Wheelchair tag.

Download photo of wheelchair here. Show release lever if appropriate

Release lever

TRAVEL TAG FOR WHEELCHAIR ON AIRLINE

Manufacturer, Model, Serial #

Type of Wheelchair

☐ Manual Wheelchair ☐ Foldable ☐ Non-foldable /Rigid

☐ Scooter ☐ Key operated

☐ Power Wheelchair ☐ Key operated

☐ Power Assist on Manual Wheelchair must report lithium battery

Removable parts	Will stay on w/c	Stow in Cabin
Seat Cushion		
Head support		
Arm supports		
Leg supports		
Control device		
Joystick, slip and puff, head array, switches		
Back support		
Tray		
Belts/Straps		
Wheels		
Side Protectors		
Other:		

PERSONAL INFORMATION

Name:

Cell phone

Alternative contact:

Factory Weight

Weight of w/c and components

Length w/o footrest

Width

Back Folds Down
☐ Yes ☐ No

Joystick is removable
☐ Yes ☐ No

Can w/c be reclined to decrease height
☐ Yes ☐ No

☐ Release lever to free wheel

BATTERY TYPE

☐ Acid/wet cell Battery (must be removed) WCBW

☐ Group 2 Gel/dry cell WCBW

☐ Lithium (must be removed and in container) WCLB

Watt hour (Wh)

MAX Wh lithium battery is 300

type of boarding chair that best meets the traveler's needs, and whether additional staff will be needed for the transfer onto the aircraft seat. It will also ensure that the below-the-wing crew has the information describing what type of mobility device and battery will be on the aircraft.

NAVIGATING THE AIRPORT

Arriving at least 2 hours before the flight ensures adequate time to check in, get through TSA, board the aircraft, and give the below-the-wing crew enough time to get the wheelchair on the aircraft so the flight can leave on time.

Ticketing/luggage check: If the boarding pass is not downloaded before arriving at the airport, the ticketing process is the same as for all the other passengers. Go to the ticket agent or kiosk to download the ticket. If luggage is being checked, proceed to check the luggage. Carry-on for wheelchair parts and medical supplies are not counted in the carry-on limitation. Bringing the equipment and supplies into the cabin can avoid delays or loss, but liquids may need to be checked because of the 3-ounce limitation rule. The wheelchair can be checked at the ticket counter; however, most wheelchair users choose to use their own wheelchair to get to the terminal/gate.

TSA: Wheelchair users can access TSA at the designated area for people with disabilities. This avoids longer lines and gives access to the TSA agents who provide pat downs or wandings as an alternative to the walk-through scanner. The wheelchair must be checked and a canine, checking for explosives or drugs, may be used. Inform the agent of limitations to movement, such as raising arms or leaning forward, which is often required during pat downs or wandings. A same-gender person will usually perform the pat down. A private screening may be requested for privacy. All bags will go through the screening machine process. TSA Pre-Check or Global Entry is available for wheelchair users and may expedite the process.

Lavatories on the aircraft and changing stations at the airport: Most single aisle aircrafts do not have accessible lavatories, although there are a few. Aircraft with more than two aisles are mandated to have accessible lavatories; however, these may be inadequately accessible to allow for a transfer. Some people

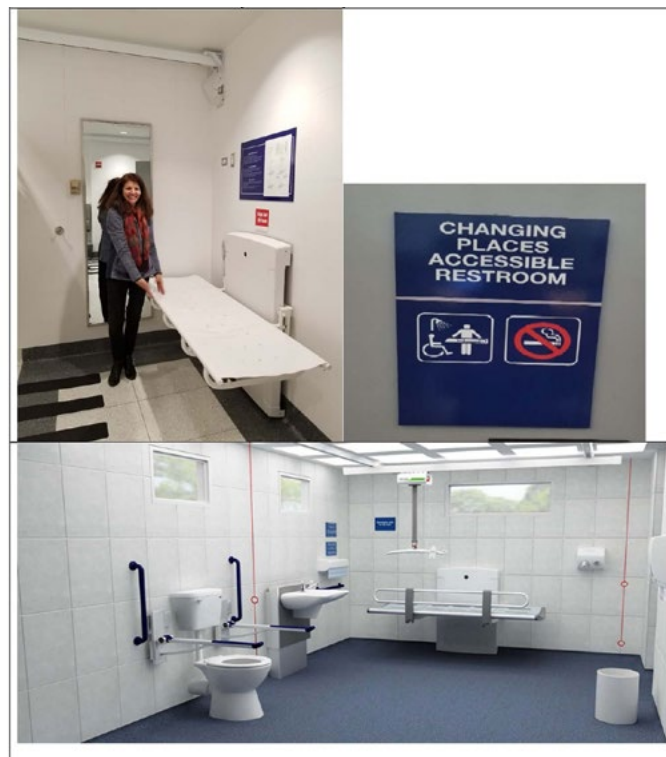


Figure 3. Changing stations are being incorporated into airports in the United States. They allow for people who are unable to use a toilet to be changed in a safe, sanitary, private location, rather than on the floor. Photo courtesy of Jessica Presperin Pedersen.

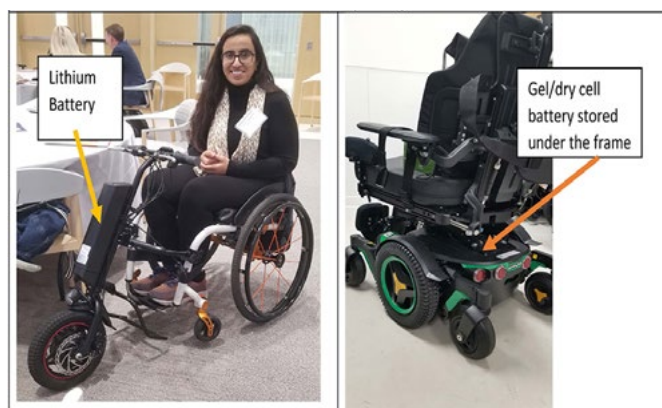


Figure 2. The lithium battery on power assist devices is attached to a manual wheelchair. It can be removed easily and will be carried in a protective carrier into the cabin of the aircraft. It cannot be stowed in the underbelly of the aircraft. The gel battery on the power wheelchair is encased under the frame of the chair and will stay on the chair during the flight.



Figure 4. Boarding chairs typically found in the United States. Photos courtesy of Jessica Presperin Pedersen. AisleMaster Columbia: Note small foot plate and seating surface. Note the pressure area under the buttock, and lack of support under the feet.

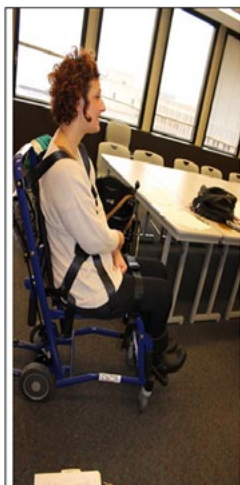


Figure 5. The Staxi Boarding chair has a large seating surface and provides support for the feet; however, some individuals have a difficult time transferring to this boarding chair because it does not have armrests. It is also higher than the standard aircraft seat, which may pose a problem with transferring out of the aircraft seat onto the boarding chair.

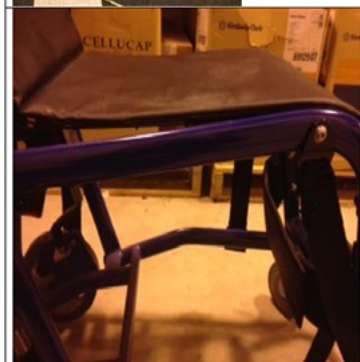


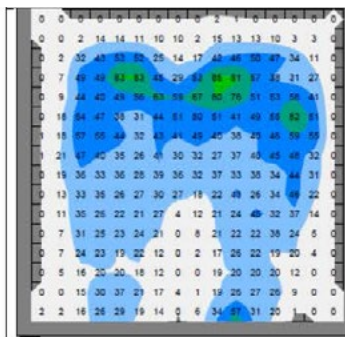
Figure 6. 3-eagle Lift works as a mechanical lift, reducing the need for a person having to lift weight. It must be performed on the right side of the plane, but it allows the individual to sit in any seat—window, middle, or aisle.

disassembling the wheelchair if directed by the owner or people accompanying the traveler.

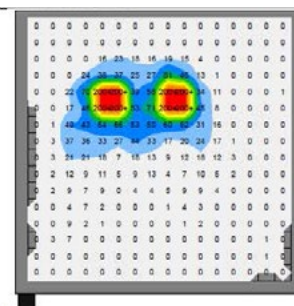
BOARDING THE FLIGHT

Some aircraft allow the wheelchair to enter the plane, where a transfer directly onto the aircraft seat can be performed; however most aircraft require a wheelchair user to transfer to a boarding chair that can fit in the narrow aircraft aisle. There are various boarding chairs, depending on the company providing the transfer services (see Figures 4, 5, and 6). A transfer to a bulkhead seat allows for a modified pivot transfer. The transfer to a standard seat requires a lateral transfer and may need to be done over armrests if the armrests are not able to be flipped up. The boarding chair is usually brought onto the aircraft backward, having the person forward facing down the aisle when being moved. The boarding chair is stopped at the assigned aircraft seat. If a manual lift is needed, it is usually done with one person behind and another in front of the person being transferred, where a lateral lift and transfer can be performed.

Figure 7. Pressure mapping of the person sitting on the cushion of his own wheelchair vs. sitting on a boarding chair. This provides evidence that the time sitting on a boarding chair should be as brief as possible to avoid skin issues. Photos courtesy of Jessica Presperin Pedersen.



Person sitting in wheelchair and wheelchair cushion.



Person sitting on boarding seat surface without a cushion.

who use wheelchairs and have difficulty getting into the lavatories will wear diapers, try to dehydrate themselves for the flight, or use a catheter. Individuals may need to empty a catheter bag during the flight. Discretion can be taken by using a blanket and emptying the urine into an opaque container or a plastic disposable bottle.

Changing stations are restrooms that have a changing table that allow an adult who is unable to transfer to a toilet to be changed. Some changing stations have mechanical transfer lifts and some include accessible showers (see Figure 3). Changing stations are at various airports in the United States, including Atlanta, Austin, Baltimore, Los Angeles, Orlando, Chicago, Phoenix, Pittsburgh, and Seattle (Morris, 2019).

At the terminal: On arrival at the terminal, let the ticket agent know you are there and ask to talk to the flight crew and below-the-wing staff to give instructions about the equipment to be stored. Making introductions to the flight attendants and pilots provides a face-to-face encounter that humanizes the experience. The pilot can ask questions about the batteries, and the transfer team can make sure they have the correct boarding chair and staff to accommodate a transfer, if needed. The below-the-wing crew can learn details about the wheelchair and ask pertinent questions. They can assist with wrapping and



Figure 8. Mölnlycke Z-Flo Fluidized Positioner. The material in the pouch will conform to the body and maintain the shape. The company sells various sizes. Photo courtesy of Jessica Presperin Pedersen.



Figure 9. This figure demonstrates how feet can dangle when a pressure-relieving cushion is used. The second picture demonstrates how a briefcase is placed under the feet to provide support. Photos courtesy of Jessica Presperin Pedersen.

from the boarding chair to the aircraft seat. It is highly recommended that the transfer to the boarding chair be done right before boarding to decrease the amount of time sitting on it.

SITTING ON THE AIRCRAFT

The aircraft seat is made of foam and is softer than the vinyl wheelchair seat surface. A cushion is still highly recommended if the individual has decreased sensation or is unable to independently change position during the flight. If an air cushion,

such as a ROHO cushion, is normally used, it may expand at higher altitudes and the enveloping characteristics of the cushion will be diminished. One can monitor the air in the cushion, letting air out and in during altitude changes. An alternative cushion, such as one made of foam or gel, may also be used to avoid over or under inflation of the air cushion during the flight. The seat back on the aircraft may need to be reclined to accommodate posture or pain during the flight; however, federal regulations mandate that all seats be brought up during takeoff and landing.

Most seating systems used in a wheelchair cannot transfer to the aircraft seat (Presperin Pedersen & Shea, 2017). Alternative support surfaces may be required, such as an adult car seat, pieces of foam, a neck roll, or a lumbar support. One piece that can conform to the body is a Z-Flo fluidized positioner, which is normally used for bed positioning in hospitals. It can be purchased online and comes in various sizes. It can provide needed lateral or posterior trunk support (see Figure 8). An abdominal chest support may be needed to prevent forward leaning during landings. This will wrap around the person and the back of the seat, so the passenger behind should be warned that this device will be used for the landing. Oftentimes, the added seat cushion adds height and causes the traveler's feet to dangle. Placing a backpack or cushion under the feet will help with positioning

Presperin Pedersen and colleagues (2019) performed pressure mapping on a boarding chair as part of a research project, with results demonstrating poor pressure distribution on all boarding chairs (see Figure 7). Most individuals choose not use a cushion on the boarding seat to make the transfers easier. They usually transfer to the boarding chair and keep their cushion on their lap. They can place the cushion on the aircraft seat before the transfer

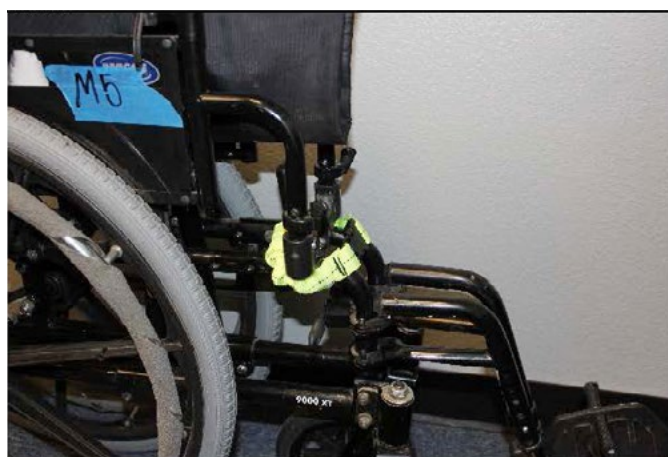


Figure 10. Chair folded with elastic strap holding it in place. Courtesy of Jessica Presperin Pedersen.



Figure 11. Small cargo hatch forces wheelchair to be placed on its side to enter cargo hold. *Photos courtesy of Jessica Presperin Pedersen and Eric Lipp.*

Figure 12. 2-man lift onto conveyor belt. *Photos courtesy of Jessica Presperin Pedersen and Eric Lipp.*

during the flight; however, these props cannot be used during takeoff and landing because of the possibility of sliding when the plane is not level (see Figure 9).

STOWING THE WHEELCHAIR

Manual wheelchairs: U.S. carriers will allow one manual wheelchair to be stowed in the cabin of the aircraft—this includes rigid and folding frames.

Remove the wheels and armrests, if possible, along with any seating supports and cushions. Fold the chair and use a strap or bungee cord to keep it folded during the flight (see Figure 10).

Power wheelchairs, scooters, tilt-in space wheelchairs, and manual wheelchairs not stored in the cabin must be stowed in the baggage area in the lower part of the aircraft. Wheelchairs are generally left on the Jetway for the below-the-wing crew to take to the under belly of the aircraft. When an individual transfers to a boarding chair on the Jetway, the baggage han-



Figure 13. The joystick might be able to be removed. If it is too difficult to remove the joystick, it can be protected using plastic food containers.

dlers take the wheelchair. Manual wheelchairs can be carried down the steps outside of the door at the end of the Jetway. Heavier power wheelchairs must be disengaged and are often pushed to the nearest elevator and then taken down to the tarmac level of the aircraft and are then pushed back to the aircraft.

Once the scooters or wheelchairs get to the tarmac, they are placed on the same conveyer belt that is used to lift luggage up to the belly of the aircraft. This is where airlines differ. Some airlines have their baggage staff lift the wheelchair to the platform edge of the conveyor belt, other airlines use a ramp, and some use a mechanical lift. Manual wheelchairs are typically placed on their side on the belt. If the wheels of the power wheelchair are not locked, the wheelchair can spin around, come off of the belt, and fall to the ground. The ground handlers are not allowed to ride on the belt holding the wheelchair, so some airlines attempt to stabilize the wheelchair while it is moved on the conveyor belt (see Figure 11).

Before leaving the wheelchair on the Jetway, take front, side, and rear view photos of it. That way, if anything happens to the chair during the flight, there will be before and after pictures. That also helps identify the chair if it is lost. Bring an empty duffel bag to hold what is taken off the wheelchair and brought into the cabin. Bring tools to allow disassembly of the wheelchair, if necessary. The below-the-wing crew will try not to disassemble the wheelchair without user direction. Consumers and those working with the airlines to train personnel have emphasized that a wheelchair is a person's legs and the intricacies of a wheelchair are specific to that person's needs. Therefore, it is critical that if parts and pieces are moved or changed, they must be placed back exactly where they were before the change was

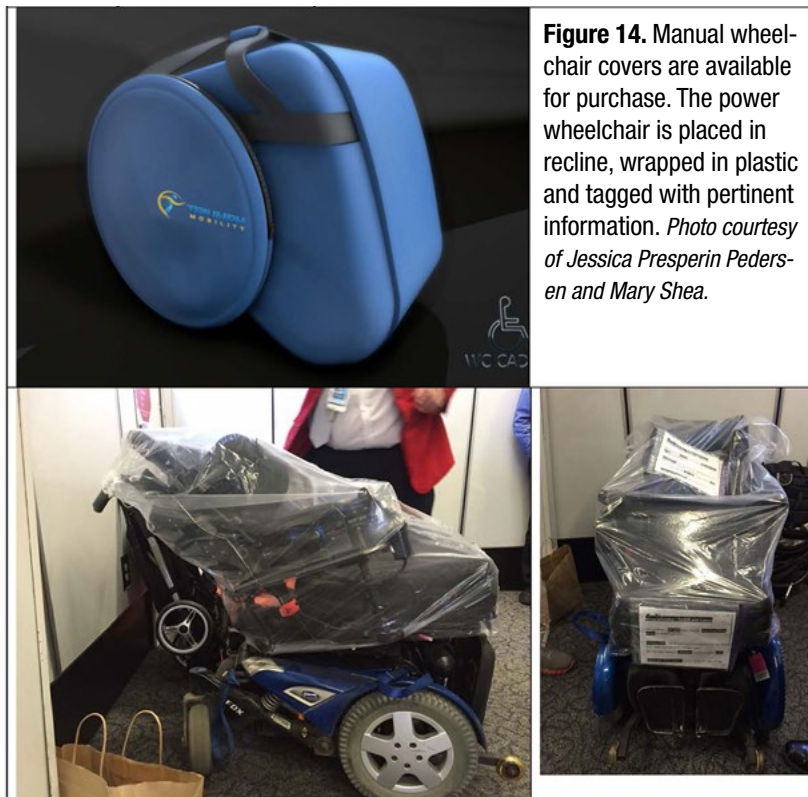


Figure 14. Manual wheelchair covers are available for purchase. The power wheelchair is placed in recline, wrapped in plastic and tagged with pertinent information. Photo courtesy of Jessica Presperin Pedersen and Mary Shea.

Not much will prevent a wheelchair from breaking if it is dropped. A power wheelchair weighs more than 300 lbs and is difficult to lift onto the conveyor belt. Airlines train the below-the-wing crew to use two individuals to lift the power wheelchair. Because so many different models of wheelchairs exist, it is often difficult for the below-the-wing crew to know where to hold the wheelchair when picking it up. It is advised to let the below-the-wing crew know the points of the chair where it should be lifted. Northwestern University Design students created “lift here” removable stickers for this purpose (see Figure 15). The cost is reasonable, and the stickers are removable. They color is easy to see from afar and clearly designate to the below-the-wing crew where to lift the wheelchair.

DEPLANING

If a boarding chair was used to board, a boarding chair should be ready to assist with deplaning. It is advised to stay in the aircraft seat until the personal wheelchair arrives in the Jetway. That way, if the wheelchair is delayed or lost, action can be taken immediately by the airline. Check the wheelchair for damages on the Jetway. If there are any issues, a complaint should be filed immediately. The complaint resolution officer is available during operation hours. Most airlines have contracted with a liaison company that will work with wheelchair suppliers throughout the world to get repairs and appropriate loaner chairs for use in case something happens. Although loaner chairs are not ideal, they are usually better than using the generic-style wheelchairs offered at the airport.

FUTURE POSSIBILITIES

The Air Carrier Amendments Act of 2018 requested an investigation into the possibility of travelers staying in their wheelchair during the flight. The nonprofit group All Wheels Up,



Figure 15: Removable Stickers to indicate where to lift the power wheelchair. These are available through <https://www.dfaascend.com>
Photos courtesy Jessica Presperin Pedersen

made. The airlines should ask permission to remove anything or take anything apart on the wheelchair. It is a good idea to bring extra tire tubes for pneumatic tires, patches, and tools generally needed for the wheelchair.

Cargo holds and hatches: Aircrafts come in different sizes. It is a good idea to know what aircraft is being flown. Larger aircraft cargo holds can easily store a power wheelchair, which can go through the cargo hatch in an upright position. Hatch openings on smaller aircraft do not allow a power wheelchair to be pushed through in an upright position. Some require that the wheelchair be tilted back or turned on its side to enter the hatch, or be placed in the cargo hold (see Figure 12).

Tilt-in-space and non-folding manual wheelchairs: Remove any cushions or support surfaces and bring those into the cabin. Wrap the wheelchair in plastic to protect it from the elements and decrease the potential for it to be scratched or broken.

Power wheelchairs or scooters: Remove the seat cushions, back, and headrest, if possible. Place the mobility device in the smallest configuration. If the back folds down, do so. If it reclines, put in in a reclined position. Many individuals remove the joystick or place the armrest attached to the joystick on the wheelchair seat. The zip ties holding the wires to the wheelchair and armrest may need to be clipped to move the joystick. Bring zip ties to restore the wires after the trip. The joystick can also be protected using a plastic container (see Figure 13). Wrapping the wheelchair in plastic may prevent it from getting scratched and can keep parts together (see Figure 14).

founded by Michele Erwin, the mother of a son with a disability, has made notable strides in advancing this idea. She has the support of consumer groups and is working with transportation tie-down companies, airlines, aircraft manufacturers, and wheelchair manufacturers to test the feasibility of safely taking off and landing using wheelchair tie-downs. For updates on this progress go to www.allwheelsup.org.

CONCLUSION

Air travel provides everyone with a means of traversing the world for pleasure, business, visiting, and exploring. The participatory opportunities are obvious, and occupational therapy practitioners are in a position to assist with this inclusive opportunity. Practitioners can work with individuals new to flying with a wheelchair. They can alleviate fears by teaching how a transfer can be accomplished on the aircraft. The individual will be able to direct their care, knowing what the methodology will be. Assisting with the online reservation process and demonstrating how to protect a wheelchair that will be stowed in the under belly of the aircraft will provide the traveler with skills for a successful flight.

Although this article discusses flying with a wheelchair, several occupational therapists are also participating in easing travel for individuals who have hearing, visual, sensory, or mental health impairments. Many U.S. airlines are designing programs specific individuals' needs, and occupational therapy practitioners have the potential to be leaders in this area of expertise.

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ACTIVITIES

1. Assist your client with filling out the attached travel tag. Weigh the wheelchair. Measure the height, width, and length. Determine what pieces can be removed and placed in a duffel bag in the cabin. Determine the type of battery. Determine whether the wheelchair can be made smaller to fit through a shorter cargo hatch. Take a picture of the wheelchair and indicate where the release is to allow the wheelchair to be freewheeled. Make several copies and laminate at least one to be used for travel.
2. Determine the best way to protect the wheelchair. Can the joystick or armrest supporting the joystick be removed? Can the wheelchair recline or tilt to decrease the height, allowing it to go through the cargo door? Where is the best place in your area to get a plastic roll, and how best can the plastic be placed on the wheelchair for protection?
3. Assist with the initial reservations and filling in the necessary information requested by the airline. Provide your client with the phone number to call 48 hours before the trip.
4. Contact an airline carrier and arrange for your Occupational Therapy Department and the airlines to schedule an educational opportunity for people with disabilities and their families. This will allow for questions and may ease the fear of flying. Some airlines may offer the opportunity for fieldtrips to the airport.
5. Simulate an aircraft and practice transfers. The typical transfers are where the boarding chair is parallel to the aircraft seat. If the person is dependent in transfers, someone needs to be in front of and behind the person to perform a transfer. Teach the person using the wheelchair how to direct the transfer and request either the bulkhead or an aircraft seat with flip-up armrests to alleviate having to transfer over the armrests.
6. If your airport does not have a changing station, inquire about getting one and provide the reasons why. Contact your local politicians to push it through.
7. Access videos from Queen Elizabeth's Foundation for Disabled People (<https://qef.org.uk/>) and articles on Wheelchairtravel.org to learn more details about traveling with a disability and keep updated on changes. Share this information with fellow practitioners, travelers, and their families.

How to Apply for Continuing Education Credit

- A. To get pricing information and to register to take the exam online for the article **Air Travel With a Wheelchair: Occupational Therapy's Role in Facilitating Successful Flights**, go to <http://store.aota.org>, or call toll-free 800-729-2682.
- B. Once registered and payment received, you will receive instant email confirmation.
- C. Answer the questions to the final exam found on pages CE-10 & CE-11 by **February 28, 2022**
- D. On successful completion of the exam (a score of 75% or more), you will immediately receive your printable certificate.

Final Exam

Article Code CEA0220

Air Travel With a Wheelchair: Occupational Therapy's Role in Facilitating Successful Flights

To receive CE credit, exam must be completed by
February 28, 2022

Learning Level: Intermediate to Advanced

Target Audience: Occupational Therapy Practitioners

Content Focus: Domain: Client Factors; OT Process: Occupational Therapy-Evaluation and Interventions

1. What problems have been reported by people who travel on commercial airlines when using a wheelchair?
 - A. Difficulty using boarding chairs; not enough seats in the cabin
 - B. Wheelchair damage; difficulty using boarding chairs
 - C. Airline pockets behind the seats are too small; wheelchair damage
 - D. Not enough seats in the cabin; stowage above the seats cannot fit a power wheelchair
2. In 2018, the Air Carrier Amendment Act provided all of the following changes *except*:
 - A. TSA to include same-gender screening
 - B. Mandatory transparency from airlines regarding damage or loss of mobility equipment
 - C. Airlines to have 20" wide aisles
 - D. Study into the possibility of being able to fly seated in one's own wheelchair

3. What batteries *cannot* be stowed in the underbelly of the aircraft?
 - A. Lithium
 - B. Gel
 - C. Wet
 - D. Dry
4. What information is *not* helpful for the below-the-wing crew to know about a power wheelchair?
 - A. Its weight
 - B. How to take the wheels off
 - C. Where the release levers are to allow the wheelchair to be pushed manually
 - D. Owner's name and contact information (cell phone)
5. TSA stands for:
 - A. Transportation Services of America
 - B. Transportation Security for America
 - C. Transport Services Administration
 - D. Transportation Security Administration
6. How many hours' notice do airlines suggest to report that assistance is needed for a power wheelchair that will be transported on the flight?
 - A. 48
 - B. 24
 - C. 30
 - D. 2
7. Occupational therapy practitioners can help prepare an individual who requires maximal assist who will be sitting on row 23 for a transfer by practicing:
 - A. Pivot transfers
 - B. Forward sliding transfers
 - C. Trapeze assist transfers
 - D. Lateral transfers
8. Per the Air Carrier Access Act, one manual wheelchair can be stored in the cabin of the aircraft.
 - A. True
 - B. False

9. **Protecting a power wheelchair for a flight may decrease the potential of breakage. What one thing should *not* be done to protect the power wheelchair?**
- A. Wrap the power wheelchair in plastic wrap.
 - B. Take removable parts into the cabin of the aircraft.
 - C. Tag the power wheelchair with information regarding the flight and condition of the owner.
 - D. Fold the back down or place the chair in a reclined position to decrease the height, making it easier to push through a smaller cargo hatch.
10. **If issues arise after a flight, who should be contacted to file a statement?**
- A. Flight attendant
 - B. Below-the-wing crew
 - C. Complaint resolution officer
 - D. Above-the-wing crew
11. **The below-the-wing crew:**
- A. Assists with transfers into the aircraft seat
 - B. Manages anything going into the cargo hold
 - C. Provides transport through TSA
 - D. Directs flight attendants boarding the craft
12. **The aircraft seat is made of foam and provides adequate pressure distribution for individuals who normally use a pressure reducing seat cushion on their wheelchair.**
- A. True
 - B. False

Now that you have selected your answers, you are only one step away from earning your CE credit.



Click here to earn your CE