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Mobility & Body Structure Access Needs

What is included in mobility & body structure access needs?[1]

This pamphlet discusses:

- Mobility impairments, including:
  - Manual dexterity/fine motor control,
  - Muscle fatigue, and
  - Ambulation & alternative forms of mobility
- Body structure, including:
  - Size and shape, and
  - Amphibious bodies

Persona Highlights include:

- P1: Surussation (Amphibious bodies)
- P2: Garick & Parsley (Dexterity, Ambulation & Alternative Mobility)
- P4: Beebul (Dexterity)
- P6: Bry-Ann-Dee (Dexterity)
- P8: Whirry (Fatigue)

Each section has some basic information around conditions, then some **DISCO-Do's** (accessibility practices that will help make an environment more inclusive to folks with a given condition) and **DISCO-Don'ts** (common barriers that exist on Earth that we don't repeat in our spaceships). Each section ends with a couple social media accounts, projects, or books that center perspectives of disability community members that share one or more of the conditions in that section. Where information is relevant to a crew member in the crew persona deck, there may be a **persona highlight** added with information about a species, particularly relevant adaptive designs that would fit their bodies, etc.

Facilitators are welcome to share this information to help guide participants in researching adaptive design to inform their spaceships, especially the disabled-authored sources. **We strongly encourage you to share at least the persona highlights with your participants.**

[1] *The outline of conditions and barriers/adaptations to consider largely stems from the **Certified Professional in Accessibility Core Competencies (CPACC) certification exam's Body of Knowledge**, written by the International Association of Accessibility Professionals (IAAP).*

We have chosen to cluster some categories together, summarizing considerations to a list of highlights (unless directly quoted), and have added in disabled centered sources/information in attempts to keep holistic accessibility at the forefront, rather than checklist/compliance based accessibility.

If any information is sourced from outside of the CPACC Body of Knowledge, there is a direct link to that source.

The most important thing to stress during the research-about-access-needs phase is that **some things pitched as solutions are not actually desired by a disabled person**. Technology can also function imperfectly compared to how it is advertised. **Look for disabled-centered articles when considering real-world research.** What do disabled people seem to prefer? What flaws do they point out with current tech, and can you use that to iterate or improve your designs?

Mobility Impairments

Mobility impairment is a pretty broad category of disability that "**limit[s] independent, purposeful physical movement of the body** or of one or more limbs" (CPACC BoK p. 18). It can include limb difference, coordination at a larger scale or more fine motor skills, musculoskeletal issues, and more.

Manual Dexterity/Fine Motor Control

"**Fine motor skills are intricate hand and wrist movements** needed to manipulate, control, and use objects," (CPACC BoK, p. 18), write neatly, and do things like button shirts.

Persona highlight - Garick

Place PH2 Dexterity bookmark here!

Persona highlight - Parsley

Place PH2-SCH1 Dexterity bookmark here!

Persona highlight - Beebul

Place PH4 Mobility/Body bookmark here!

Muscle Fatigue

Muscle fatigue can be involved in a range of conditions, and involves overwhelming exhaustion that can lead to difficulty in performing tasks. This fatigue can be present anywhere in the body, and can come with localized pain, weakness in grip or specific muscles, and more.

Persona highlight - Bry-Ann-Dee

Place PH6 Mobility/Body bookmark here!

Persona highlight - Whirry

Place PH8 Mobility/Body bookmark here!

Ambulation & Alternative Forms of Mobility

Ambulation refers to one's ability to walk (with or without an assistive device). A variety of conditions may affect someone's ability to walk (affecting balance, stamina, muscle control, etc.)

Some folks need an assistive device like a cane to support ambulation, while others may need a mobility aid like a wheelchair that alters the base form of mobility from ambulation to rolling. **(Note: Ambulatory wheelchair users do exist!** With cases like variable chronic illness, an ambulatory wheelchair user may use a wheelchair sometimes, and be able to stand and walk for brief periods of time.)

Persona highlight - Garick

Place PH2 Ambulation & Alternative Mobility bookmark here!

Service animals can provide all kinds of assistance for various types of disability, and that includes mobility work! **Just like environments need to consider different types of mobility aids an individual may be using to get around, it's important to consider service animals being able to navigate the space safely as well.**

Body Structure

Size and Shape

"Body size or shape disabilities are disabilities caused by disorders that affect a person's stature, proportions or shape" (CPACC BoK p. 19). This is often a case of body-environment mismatch being the primary cause of disability, when the world is designed for a (mythical) average size or shape, and an individual does not fit that average close enough. **Designing flexible environments** with adjustable seating, desks, etc. is key here.

Persona highlight - Maeve

Place PH5 Mobility / Body bookmark here!

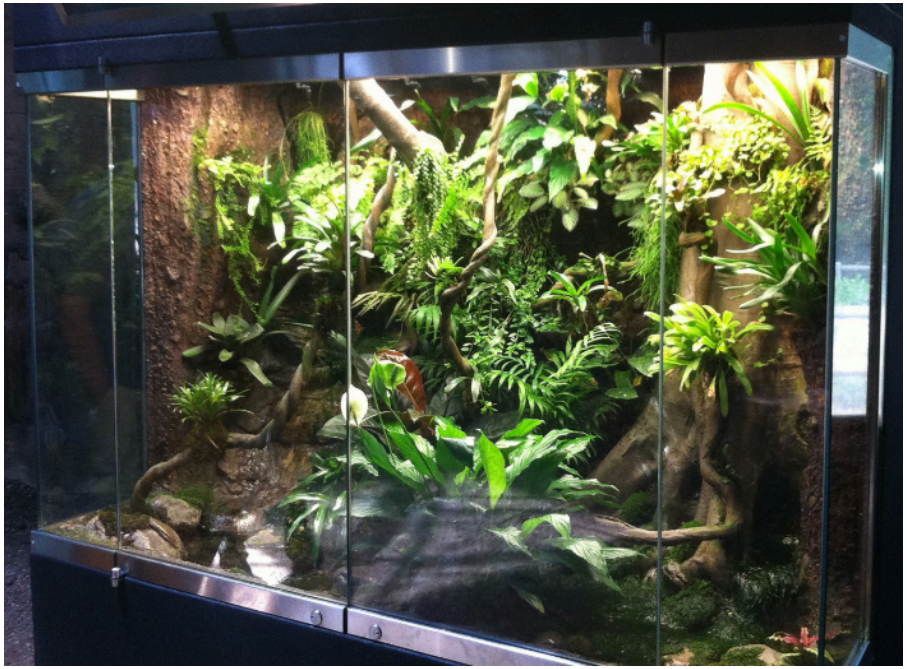
Too much sun exposure will damage amphibian skin. Windows on any ship must ensure the rays of stars passed during planetary travel won't be too intense by filtering UV rays.

Persona highlight - Surussation

Place PH1 Mobility / Body bookmark here!

Amphibious Bodies

Amphibious bodies require regular access to water (either in mist or bodies of water). In rooms without direct access to bodies of water or mist, the humidity must be kept high enough to create moist air.

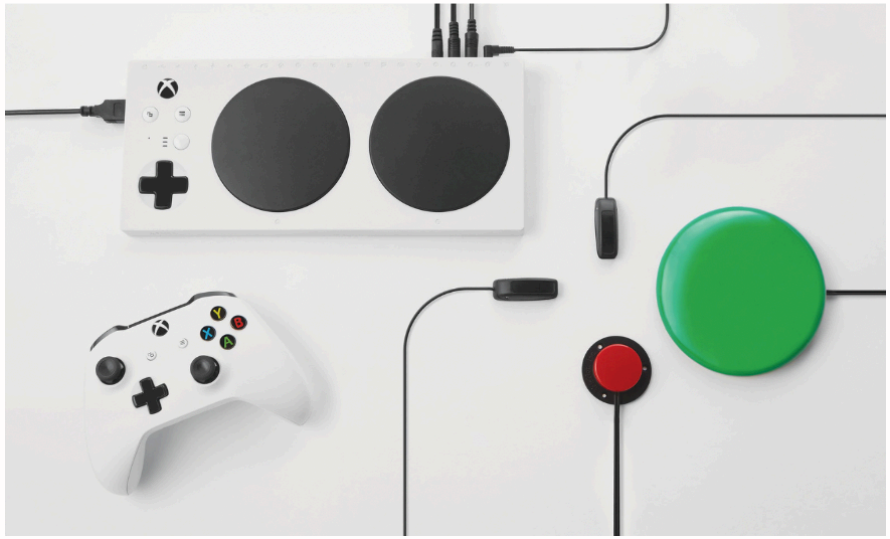


[Refer to footnote for licensing information on photo of amphibious tank with water access and heat lamps[3]]

[3] *Photo is of the Maryland Zoo in Baltimore Golden frog exhibit, uploaded by Tomer T and authored by Brian Gratwicke. It is licensed under the Creative Commons Attribution 2.0 Generic license.*

DISCO Do's [what to add]:

- Flat and wide entryways and paths of travel that are unobstructed for various types of mobility (wheeling, walking with mobility aids, etc.)
- Ramps and elevators over stairs
- Harder floors are easier to navigate on wheels (but softer floors that cushion some impact are easier on joint pain! This could be a point of conflicting access needs depending on your crew)
- Large touch targets for controls and digital interfaces
- Consider **Universal Design Principle 7: Size and Space for Approach and Use**, mentioned in our intro manual! (i.e., Can both seated and standing crew members reach/operate necessary controls?)
- Offer voice control for interfaces!



[Refer to footnote for licensing information on photo of xBox adaptive controller[4]]

DISCO Don'ts [barriers to avoid]:

- Seating that is too big or small, or seating (and counters) that is too tall or short
- Requiring fine motor skills or a high degree of accuracy
- Requiring physical exertion
- Steps, thresholds, and other obstacles to gaining entry to a space

Disabled-Centered/Led Accounts:

- Imani Barbarin @crutchesandspice on Instagram
- Adaptive Design Association
- Kinetic Light
- Izzy Wheels
- Custom Service Dog gear makers, who are service animal handlers themselves!
  - @wiggleswear on Instagram
  - @ground_zero_gear on Instagram
- (In addition to co-creator Lynn's service dog Nirvana,) the second service dog featured in this pamphlet is Nessa, service dog of Val Figeuroa! This team can be found @uno.dawgs.tres on Instagram

[4] *Photo is licensed with CC BY 2.0 Generic. It comes from Flickr by Rosenfeld Media.*