

HOW DO I DEVELOP READINESS FOR POWER MOBILITY?

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Access to Independence



Permobil Koala PWC

What we will be covering:

- Developing Readiness
- Goal: Developing skills to prepare for successful PWC use



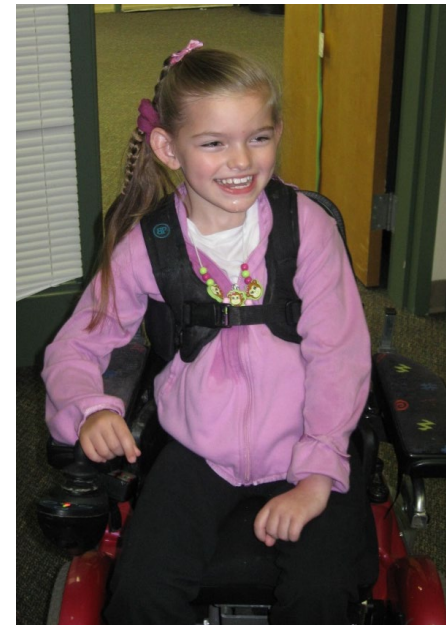
Determining Readiness

- Our last webinar discussed how to **determine if a child is ready** for a PWC evaluation
- If the child is not yet ready, we use **Pre-Mobility Training to Develop Readiness** and then re-evaluate
- A Power Wheelchair is not even required!

Are you ready?

Where does Pre-mobility Training fit in?

- The client does not have to show mastery of each of these mobility concepts, only potential at this point
 - Pre-assessment
- If the client is having difficulty with one or more of these concepts, Pre-mobility training can be used to develop those skills prior to an assessment
 - Increases likelihood of success in the assessment



Pre-mobility Training

- Motor skills
 - Access method
- Cognitive skills
 - Mobility concepts



Invacare joystick

Developing Motor Skills

- Joystick
- Switches
 - If the child is not able to use a joystick
 - Switches are also easier for very young children to learn – more concrete
 - The child can transition to a joystick later

AbleNet Big
Red, Jellybean
and Specs
switches



vs.



R-Net
Joystick

Motor Skills: joystick

- Joystick Control
 - The driver must be able to grade the force and distance of movement to utilize the 360 degrees of available movement and proportional speed
 - Co-contraction
 - Difficult if client has abnormal tone



Motor Skills: joystick

- Joystick Control
 - USB Joystick Mouse
 - Computer Software
 - i.e. painting program
 - Tablet with USB mouse
 - Android, Windows
 - This doesn't translate over very well to learning how to move a power wheelchair through space, but does develop motor skills

AbleNet Rock
Adapted
Joystick



Motor Skills: switch

- Sustained switch contact is required to continue movement of the power wheelchair
- Latch on a power wheelchair can be used in Forward and sometimes Reverse
 - Safety issues with children
- Quick and accurate release for stopping



AbleNet Micro Light
Switch

Sustained Switch Contact

- Switch Toys and other Battery Operated Devices
 - Direct connection with battery interrupter or pre-adapted device
 - The toy or other device is active only as long as the switch is depressed



AbleNet Specs
switch, Battery
Device Adapter
and battery
operated toy

Sustained Switch Contact

- Direct Mode on AbleNet PowerLink 4
 - Provides practice sustaining switch contact with electrical devices



AbleNet
PowerLink

Switch Release

- Switch Release for accurate stopping
 - Develop activities or games to encourage the child to release the switch at a specific time
 - i.e. connect a train set to the PowerLink. Encourage the child to stop the train at a certain location.



Basic EADLs

- Electronic Aids to Daily Living (EADLs) provide an alternative means of controlling devices in the environment
 - Including lights, audiovisual equipment, simple appliances
- Basic EADLs provide alternative on/off control of battery operated and electrical devices
 - Switch adapted battery operated toys and devices
 - Switch Latch and Timers
 - PowerLink



AbleNet

New Option!

- Stealth Products Loonz!
- App that allows the client to play games through the driving method
- Can connect iDrive 4.0 driving method to a manual wheelchair and connect to an iPad through Bluetooth
- Portable rechargeable battery pack



Loonz!

Developing Motor Skills

- Goal at this point is simply developing motor skills
- Skills do not have to be perfect to move forward
- Many clients do not require this training, but some clients will in order to eventually be functional driving a power wheelchair
 - Taking longer is ok if that is what it takes to achieve success!



Questions?

Developing Cognitive Skills

- Cause and Effect
- Stop and Go
- Directional Concepts
- Problem Solving
- = Pre-mobility training

Mobility Concepts

- We discussed these in detail in the webinar How Do I Know a Child is Ready for Power Mobility?
 - Check out the recorded webinar at https://www.ablenetinc.com/resources/recorded_webinars/
- Let's quickly review a few...

Cause and Effect Concepts

- The client realizes that activating the access method is causing movement of the power wheelchair
- Measure: verbal or non-verbal expression



Stop and Go Concepts

- The client realizes that activating the access method is moving the power wheelchair and that releasing the access method stops that movement
- Measure: verbal, following directions to Stop and Go or stopping for obstacles. Does not require accuracy.



Directional Concepts

- The client realizes that the power wheelchair will move in different directions, depending on how the access method is used.
- Measure: the client responds verbally or non-verbally to different movement caused by different input or attempts to move to a location using different directional commands.



Problem Solving

- The client demonstrates developmentally appropriate problem solving during driving
- Measure: the client will maneuver the power wheelchair to a designated destination without cues



How do we train Mobility Concepts?

- I'm so glad you asked!



Two Methods

1. Use Basic EADLs to develop specific cognitive skills
2. Use dependent mobility base to “simulate” movement of a power wheelchair
 - Use both to increase learning!
 - *No Power Wheelchair required



Cause and Effect

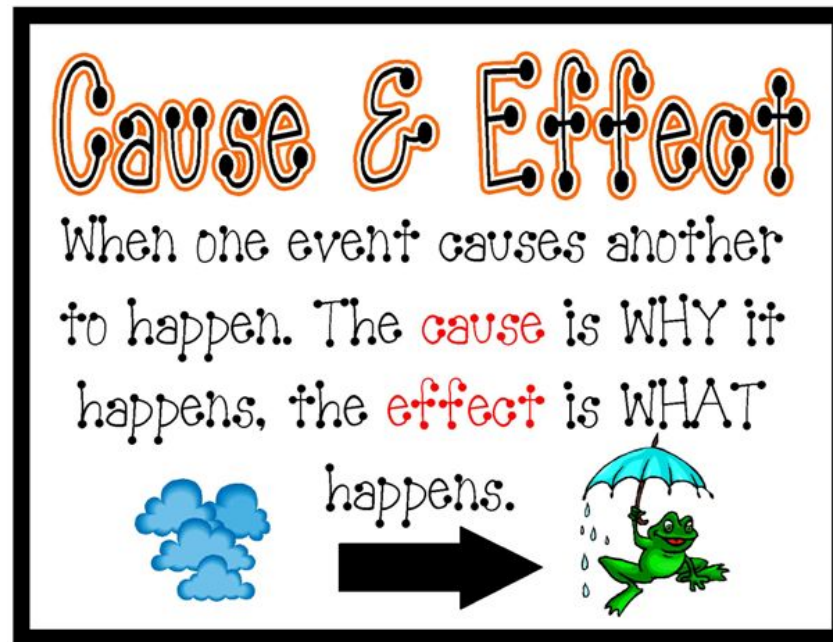
- Cause and Effect: Method #1
 - Switch Toys
 - PowerLink 4 in Direct Mode
 - Cause – press switch
 - Effect – toy/device activation



AbleNet
PowerLink and
Jellybeamer
Switches

Cause and Effect

- If a client is struggling with Cause and Effect concepts, they will be unable to use a power wheelchair for functional mobility
- Some clients have cause and effect, but are bored and don't want to play...
 - Motivating activities
 - Vary activities



Direct Control

- Direct control requires sustained switch activation to continue activation of the battery operated or electrical device
 - Switch release results in the device stopping
 - Similar to PWC control. Sustained switch contact is required to continue wheelchair movement and switch release stops the wheelchair



Go



Stop

Latch Control

- Latch control requires momentary switch activation. The first switch activation turns on the device which continues to be activated even after the switch is released. A second switch activation stops the device.
 - Latch control is available on most PWCs. However, it is typically only available through programming for Forward and sometimes for Reverse directional control. Sustained switch control is still required for most driving
 - Also, Latch is typically used when the wheelchair user is driving with sip 'n puff
 - Latch can be a safety issue if the client is not attentive and so is rarely used with children



Go



Stop

Stop and Go

- Stop and Go: Method #1
 - Switch Toys, Direct connection
 - PowerLink in Direct Mode
 - Switch Latch and Timer (SLAT) in Latch Mode
 - PowerLink in Latch Mode
- Switch Activation = Go
- Switch Release = Stop



AbleNet SLAT
Receiver

Stop and Go

- Wait, that sounds like Cause and Effect?
- Cause and Effect means the client realizes they are making something happen
- Stop and Go takes this up a notch. The client realizes they can both start and stop movement.
- This incremental step requires specific training in some clients



Stop and Go

- Stop and Go: Method #2
- If the child is in an adaptive stroller or manual wheelchair...
 - Place a switch (or colored paper circle) where the client can access it. It is not plugged into anything.
 - When the child presses the switch, push the mobility base
 - When the child releases the switch, stop pushing



AbleNet Microlite switch



Stop and Go

- Video 1

Stop and Go

- Video 2

Stop and Go

- Video 3

Stop and Go

- Goal: to develop the concept of Stop and Go. The client does not need to stop accurately at this point, but understand the concept.



Directional Concepts

- Directional Concepts: Method #1
 - 3 switches, 3 devices
 - Reinforces that each switch has a different function
 - Does not yet reinforce directions



AbleNet Specs
switches



Directional Concepts

- Directional Concepts: Method #2
- Place 3 switches where the child can access them
 - Tell the child how this works
 - Move the chair in the corresponding direction when the child activates a switch



What about the Joystick?

- I think this client can use a joystick. Should I use switches in training these mobility concepts?
- Yes! The concepts are the same and it is easier to use switches on a manual mobility base
- Cognitively, using separate switches is often easier than using a more abstract joystick

AbleNet Big
Red, Jellybean
and Specs
switches



vs.



R-Net
Joystick

Directional Concepts

- Directional Concepts: Method #2
 - Verbalize direction of movement while pushing the mobility base or driving the car
 - Play Follow the Leader



Directional Concepts



Directional Concepts

- Goal: to develop the concept that specific joystick movements or switch activations move the wheelchair in a corresponding direction. The client does not need to drive from Point A to Point B accurately at this time.



Problem Solving

- Problem Solving: Method #1
- SLAT
 - The first switch activates one device. The second switch activates another device.
 - Client has to determine which switch to hit and when



AbleNet Dual
SLAT



Problem Solving

- Problem Solving: Method #2
- Place 3 switches where the child can activate them
 - Tell them how this works
 - When the child activates a switch, move the mobility base in the corresponding direction
 - Encourage them to “drive” to a specific location

AbleNet Jellybean switches and Universal Switch Mounting Systems (UMS)



Problem Solving

- Problem Solving: Method #2
 - Allow the child time to explore
 - Play Hide and Seek



Problem Solving

- Goal: to develop the ability to determine the necessary combination of switch activations to get from one location to another.
 - This will transfer over to the necessary combination of joystick movements in the future
- Your client may take the “long way”, but every switch activation is a learning opportunity



Newer Option!

- Virtual Reality
 - Options are now available that allow someone in a static base to experience movement. A PWC driving method is used, along with VR goggles and a variety of environments
 - Stealth Products
 - <https://www.youtube.com/watch?v=lpNclPPTpM8>



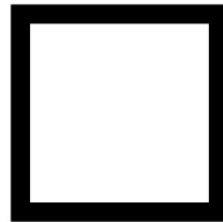
Questions?

Take Home Message:

- Some kids hop in a power wheelchair and start driving immediately
- Other children need time and training to develop the skills required prior to a power wheelchair assessment
- Many strategies can be used to develop readiness

Next Time:

- How do I train a child who has a power wheelchair to be a better driver?
11/19/19



SPREADSHIRT
Be there
or be square.

Resources

- Access to Independence Website
 - www.atilange.com
 - Pre-mobility training guidelines



Access to Independence

Thanks!

Contact Information

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PRE-MOBILITY TRAINING GUIDELINES

The following guidelines are designed to develop and improve pre-mobility concepts. These are the skills necessary to drive a power wheelchair. Individual needs, deficits, motivations, and learning styles should be considered in training. Most students learn best with frequent, short lessons.

1. Positioning.

Make sure the student is positioned as well as possible. This will optimize physical function.

2. Vision

Make sure the student has adequate vision and visual perceptual skills to safely regard the environment and move through it. Seek intervention in this area, if needed.

3. Stop and Go concepts.

Your student needs to understand Stop and Go concepts. This includes discriminating between moving and being still as well as causing movement and stopping movement.

- When you are moving your student (i.e. pushing their manual wheelchair), let them know it (i.e. “we are moving”, “go”). Also verbalize stopping. You can reinforce this with games such as Green Light, Red Light.
- When you are driving a vehicle with the student as a passenger, verbalize the movement of the car. “The light is red. I stopped. The light is green, I’m going.”
- If your student has any independent mobility (such as crawling, gait trainer), you can work on stop and go causal concepts by again verbalizing their own movement for them (i.e. “you are going!”, “you stopped”). Playing games using their own movement is very helpful.
- If your student does not have independent mobility, try a switch toy, particularly a car-type toy. The student can press the switch to make the toy “go” and “stop”. Power wheelchairs, when driven by switches, require a sustained switch closure. When using switch toys for pre-mobility training, do not use a Switch Latch and Timer, which allows intermittent switch closures to operate the toy. Intermittent switch closures are great for training switch scanning (i.e. to access a communication device).

4. Directional concepts.

Even if your student does not understand left and right, they need to understand how to make a wheelchair move in an indicated direction.

- First, work on a basic understanding of directions. Standing in front of the student, point out an object to their left. Verbalize that the object is on their left or “over there”. At this point, the student needs to understand the direction of an object relative to their own position. Ask the child to look at objects in various positions in a room and point to the objects if able.
- When you are moving the student in their manual wheelchair, verbalize your turns (i.e. “here is the corner, we are turning left” or “here is the doorway, we are going to turn into the doorway”).
- When you are driving a vehicle with the student, verbalize the direction you are moving the car in. “Here is the store, I’m turning left, into the parking lot”.
- If your student has any independent mobility, verbalize the direction they are moving in (i.e. “you are going straight”, “you are moving to the table”). Ask them to move toward an object or play Follow the Leader.
- If your student does not have independent mobility, use these concepts with a switch toy. Verbalize what directions the toy is moving in.

5. Judgment

A big part of using a power wheelchair is judgment. How fast is safe in this situation? Do I stop when someone steps in my path? When there is no curb cut, what should I do? At the pre-mobility concepts stage, emphasize safety and judgment whenever appropriate. When pushing the client in their manual wheelchair, verbalize these issues. “I have to push you slower now, there are a lot of desks in this class”, “I had to stop pushing you because someone walked in front of us” and “I have to go around to the driveway, going off the curb is not safe”. These issues can be verbalized in the car, as the student crawls at home, or when using a switch toy.

6. Real time practice

The manual wheelchair or adaptive stroller base can be used to develop mobility concepts.

Place 3 round pieces of paper or actual switches on the manual wheelchair tray (or in other locations that meet the client's needs) for Forward, Left and Right directional control. Start with only Forward. Once the client understands that this 'switch' moves the mobility base Forward, try adding one directional switch. Then add the third. Only place these during Driver's Training. When the student touches the Forward paper or switch, the trainer pushes the wheelchair forward. When the student lets go, stop. Make sure to push the chair exactly how the student is pressing these locations, even if this means bumping into objects (just bump gently).

After your student has mastered pre-mobility skills, power mobility can be re-evaluated and more advanced mobility skills can be developed.

For more Resources, check out:

Power Wheelchair Criteria – Indoors
Power Wheelchair Criteria – Outdoors
Mobility Training Guidelines

www.atilange.com