

# **Chapter 7**

## **Adaptive Sea Kayaking**

## Foundations of Efficient and Safe Kayaking

This chapter provides you with detailed explanations regarding how to protect your body while kayaking with ETC and how to adapt sea kayaking for a range of special needs. The goal of this chapter is for you to better understand how ETC Guides can make kayaking accessible and successful for all participants. Although not all impairments and disabilities are discussed in this chapter, the goal is to increase your confidence, competence and excitement as you work with people who might experience challenges when kayaking with ETC.

### Proper Body Positioning

An understanding of the most efficient physical positioning and movements for kayaking is important when considering various kayak adaptations. Every Guide and participant must remember to practice and maintain proper body positioning throughout the entire kayaking trip.

#### Lifting and setting down kayaks:

- All kayaks should be carried by two persons or more unless using kayak wheels.
  - Single kayaks: 2 or 4 people, one at the bow, one at the stern and/or add a person to either side, grasping onto the cockpit coaming.



- Double kayaks: 4 or 6 people, two on either side of the boat, grasping onto the cockpit coaming. Add one at the bow and one at the stern if needed.



- Triple kayaks: 6 or 8 people, three on either side of the boat, grasping onto the cockpit coaming. Add one at the bow and one at the stern if needed.



- Bend at your hips and knees, not with your back - almost like doing a squat when lifting or setting down a boat (holding stomach muscles tight, elbows bent, good hand placement, and bending at the knees not the hips).



- Use core strength by tightening your abdominal muscles when lifting and setting down a boat.
- Use a basic underhand grasp to maintain a natural wrist position.



- Designate a leader or have everyone count to three so everyone is in sync when lifting or setting down a kayak.

#### Carrying/transporting kayaks:

- Always communicate. Have the person at the front of the boat voice any obstacles ahead to maintain safety.
- Make sure hand placement is comfortable and secure prior to lifting the kayak.
- When carrying multiple boats in a row (not at the same time), it is best to alternate using the left side of your body and then the right to balance out muscle usage over time and decrease muscle fatigue.
- While carrying the boat, make sure to keep your back straight and to keep your elbows slightly bent to prevent hyperextension, extending your elbow past normal motions.
- Use core strength by tightening your abdominal muscles while walking.
- Look straight ahead, not down.
- Announce that if anyone needs to rest they should verbalize that and have the leader count to three so that the group can lower the boat evenly.
- Wear sturdy footwear to reduce the risk of tripping or slipping (e.g. flip flops are not ideal).
- ETC has kayak wheels to help transport kayaks. More than one person is needed to mount a kayak on a set of wheels. Once mounted, the kayak can be pushed or pulled independently by a single person.





**Dolly position for a  
single**



**Dolly position for a  
double**



**Dolly position for a  
triple**

### Getting in and out of the kayak:

- Refer to the *Soft Gear and Boat Talk Outline* in Chapter 2 of the *ETC Sea Kayak Guide Manual*.
- Refer to *Safety during Transfers* (page 132 of this chapter).
- Remember to NEVER stand in a kayak.



### Maintaining good posture while sitting in the kayak:

- Refer to the *Paddle Talk Outline* in Chapter 2 of the *ETC Sea Kayak Guide Manual*.
- Perform frequent checks, perhaps every five minutes, to ensure that you and the participants maintain good posture while sitting in the kayak and during paddling.
- Make sure that the foot pegs are adjusted to participants' comfort and height. This helps maintain good paddling posture and stability.



**Good  
Positioning**

## Bad Positioning:



# Kayaking Adaptations for Different Limitations

## Generalities of Adaptive Kayaking

According to the World Health Organization, a **limitation** is defined “as any health problem that prevents a person from completing a range of tasks, whether simple or complex (WHO, 2015).”

Every individual is unique and possesses their own strengths and abilities, regardless of any limitations they may have. ETC has adaptive equipment to make kayaking safe, efficient, empowering and fun. Being aware of each individual’s functional challenge(s) is essential when deciding which boat to use and whether any seat or paddle adaptations are needed. As you learn about the different adaptations and about which equipment is suitable to a particular individual, you will be able to adapt a kayak for a particular individual depending on their abilities and needs.

Most of ETC’s adaptive gear is stored in the soft gear container in Sausalito, such as padding, adaptive seats, adaptive paddles, Mobi Mats, and toilet adaptations. In the Tomales Bay containers, there is a beach wheelchair, youth sized paddles and older beach traction mats similar to the Mobi Mats stored in Sausalito. If you know you will need extra adaptive gear for a Tomales Bay trip, the Trip Leader or a Guide will be responsible for gathering adaptive equipment before the trip.

### Remember:

- Always ask participants about what they can do. Do NOT make assumptions based on past experiences with other participants. Everyone is unique and everyone has his or her own way of adapting, engaging and doing. A participant who may have never kayaked before might want to make this their new hobby, so EMPOWERMENT is key.
- Frequently monitor participants throughout the trip, and instruct them to let you know if at any point they need to rest due to discomfort, pain or fatigue.
- Use your best judgment when choosing the right kayak and any indicated adaptations for your participants, but never hesitate to consult with the other Guides to confirm appropriate choices.

## Safety During Transfers

Some participants experience difficulty transferring themselves in and out of a kayak independently. Persons who use a wheelchair or who experience limitations with their balance, vision, or other factors are more likely to need assistance.



A few key points about transferring participants:

- TAKE YOUR TIME. Rushing the process only increases the chances of injuries to you and the participant.
- Ask the participant about how they transfer - don't be afraid to ask questions.
  - Questions you may ask:
    - Can you transfer by yourself?
    - How do you transfer?
- Encourage the participant to be as independent as possible.
- Depending on an individual's need, assign either one or two Guides to work closely with them throughout the entire trip to promote a safe environment for both the participant and others on the trip.
- Beach wheelchairs are available, one in Sausalito and one in Tomales Bay
  - This prevents a participant's wheelchair from getting dirty or sandy and also allows individuals to be as close to the water as possible before launching.

Make sure to continually communicate with the participant and with other individuals helping with the transfer during the entire process. Use a counting method: for example, all Guides will lift the participant on the count of three to ensure that the transfer is smooth and coordinated.

Remember:

Keep your back safe. Instead of bending your back, bend your knees as if you were doing a squat, and use core muscles

Specific types of assisted transfers:

- **Self Transfers (Standby Assist):**
  - This transfer is for individuals who are able to transfer themselves.
  - You should remain nearby to provide support if needed, such as helping to stabilize the boat by sitting on the bow or stern, or telling the participant "Let me know if or how I can help you."
- **Fireman's Carry**
  - This transfer requires two lifters/Guides and one spotter.
    - Make sure the two individuals lifting the participant are of roughly equal height.
  - Position a pad behind the cockpit of the kayak as a "landing zone."
  - Each lifter/Guide should stand on either side of the participant.



- The two lifter/Guides will grasp their hands and arms in the specific Fireman's Carry grasp.



- Each lifter will place their arm (in the Fireman Carry grasp) around the lower back of the participant



- Each lifter will place their other arm under the knees or lower thighs of the participant (depends on the height and comfort of the participant and lifters)



- Once the spotter is in place behind the wheelchair or where the participant is sitting, the two lifters/Guides will communicate with each other and with the participant to make sure everyone is ready.
- After counting out loud to three, the two lifters/Guides will lift the participant up and make a quick squeeze (“a hug”) to secure the participant in between them. This provides security and balances out the weight distribution. If the participant is able to help by wrapping their arms around the shoulders of the lifters, that can be quite helpful as well.
- Once the participant is lifted, the spotter will remove the wheelchair and assist with spotting the two lifters/Guides to the kayak.
- The spotter will then get on the other side of the kayak and assist in guiding the participant to the pad behind the cockpit. The spotter may be required to physically assist with correct placement by placing hands on the lower back.
- Constant communication between the participant and the Guides helps ensure a safe transfer.
- **Sling Transfer**
  - The sling is stored in Sausalito with other padding (it is khaki colored with black straps).
  - ETC currently has one sling that should be utilized if someone requires more than two people to help transfer them.
  - Sling transfers take time due to the number of Guides required for safety with this transfer to and from the kayak.
  - Two key points about a sling transfer:

- Make sure the individual's bottom is placed on the sling to prevent "bottoming out" (slipping out of the sling).
- Have participant cross arms so they do not get squished or increase chance of injury during the transfer.



#### Assisting someone with transferring from a wheelchair into a kayak:

- Step 1: Ask them how they usually transfer. This discussion will make the participant feel more comfortable and empowered throughout the process.
- Step 2: Make sure the kayak is as close to the water as possible so proper body mechanics can be utilized once the boat is ready to be launched. Be aware of tide changes and surf conditions. Dragging the boat is not good for the boat and even worse for your back.
- Step 3: Either use a Mobi Mat (an accessible mat that can be rolled out onto sand to mock a hard surface and keep sand from getting in the wheelchair) to bring the participant's wheelchair to the kayak, or use a beach wheelchair, sling, or transfer.
  - Remember that a wheelchair is a participant's personal equipment – respect how they want their wheelchair to be taken care of.
- Step 4: If the participant can transfer himself or herself, remain by the boat in case they need help with stabilization. Ask the participant where you should stand in case they require assistance. Make sure to place some type of padding for the individual to sit on prior to getting into the kayak. Sit with your legs straddling the rear hatch in case the participant loses their balance.





- Step 5: If a participant requires an assisted transfer, described above, make sure to have continuous dialogue throughout the process. Communicating with participants can reassure those who might be afraid of falling or being dropped.
- Step 6: For some, transferring from the wheelchair to the area behind the cockpit may be a bit challenging. You can use a milk crate positioned on the ground next to the kayak and transfer the participant to the milk crate first. This can help to break down the steps and make the process less strenuous on all.



- Step 7: Once the participant is seated on the pad behind the cockpit with their body positioned perpendicular to the boat, a Guide will sit behind the participant, to provide support and help with any loss of balance. Another Guide will sit in front of the cockpit while a third Guide stands in front of the participant's legs.
- Step 8: Once every Guide is in position, the participant will count to three and the Guide standing in front of the legs along with the Guide sitting behind the participant will pivot the participant so their legs are inside the cockpit.
  - Padding may be needed for the back and inside the cockpit for participant's legs, so make sure the padding has been placed before the participant sits inside the cockpit.
- Step 9: The Guide sitting in front of the cockpit will then help guide the legs inside the boat while the Guide sitting behind the participant lifts and scoots the participant into the seat inside the cockpit. The third Guide will help and make sure the participant doesn't sit on the seat back.





When you are finished paddling, repeat the above steps in reverse order in order to transfer the individual back into their wheelchair.

## **Trunk Limitations**

Limitations of trunk control and functioning are characterized by difficulty and/or inability to sit unsupported in a chair while maintaining upright posture and balance. Stable seating and positioning is vitally important during any kayak experience. When thinking about positioning, especially in a kayak, remember the “five points of contact in a kayak...two feet, two thighs, and one buttocks” (Zeller, 2009, p. 69). Not only will maintaining five points of contact help prevent the boat from capsizing, but it also helps promote and support proper positioning and to reduce fatigue.

Think about all the situations in which you sit and what helps you maintain upright posture...

- How does the chair in which you are sitting help you sit upright?
- How does the positioning of your legs and arms affect your posture?
- What helps you maintain upright posture?
- What sitting positions become uncomfortable and make you restless or fatigued?

The same principles apply for sitting in a kayak. The key question is how you can facilitate stable seating and positioning in a kayak for someone who does not have good trunk control.

### Tips for Guides:

ETC has four types of seat adaptations for individuals with limited trunk stability, balance or control. Some reasons why an individual might require an adaptive seat include:

- Pain or discomfort in the upper or lower back as a result of a previous injury or from sitting in one position for a period of time
- A condition that decreases an individual's ability to maintain trunk control and unsupported sitting balance (e.g., spinal cord injury, muscular dystrophy, and/or cerebral palsy)

### Adaptive Seats:

1. **Creating Ability Seat:** Manufactured by *Creating Ability*, this seat provides supportive seating, as it can be “independently tilted, adjusted or removed to create a custom fit.” The seat’s back and side supports are cushioned with closed-cell foam and are covered in breathable mesh fabric for skin protection. (Creating Ability, 2015).



2. **ETC Adventure Maker Chair:** Created by ETC staff and participants, this seat contains four sections (back, seat, and two sides), that each contain a combination of adjustable rigid and inflatable padded supports. This seat is designed to be versatile, durable, and above all, comfortable.



3. **Crazy Creek Paddle Chair:** This type of seat provides extra back support by doubling the height of the existing seat's back. This high back seat provides support along with helping the user maintain proper positioning and posture.
- These seats are used for extra back support on top of the regular seat in the cockpit. Use non-skid padding to make sure this seat adaptation is securely positioned.



4. **Sit-on-Top Sea Kayak Seatback:** Similar to the *Crazy Creek Chair*, this seat helps support an individual's back and balance during kayaking.
- These seats can be used in the double kayak labeled AA. There are hooks attached to the inside of the boat to ensure proper positioning of this seat when the regular cockpit seat is removed.



#### Tips for Using Adaptive Seats:

- Optimal position: "higher in front, lower in the back" (Zeller, 2009). This can be created by adding padding (e.g., foam or old personal flotation device (PFD)) to create an angle that slightly elevates the hips to create a normal curve in the spine along with proper positioning of the legs.

- The angle of the seat bottom and back can be adjusted to encourage upright posture. Loosen and tighten the straps to create different angles until you find the most comfortable position for the paddler.
- Use enough padding to create a stable upright posture, but not so much that it poses a threat in the event of a capsize.
- Make sure to provide support behind the knees by using a rolled up sleeping pad, towel, or other padding to support the knees and to help maintain an upright posture.
- Although factory seats can easily be removed from all of the *Northwest Kayaks Seascape* doubles and triples, the *Northwest Kayaks Seascape* Double labeled AA has the anchor points / hooks for sit-on-top seats installed. Thus, this is a great boat to use when needing to install an adaptive seat for an individual.
  - The white and purple *Northwest Kayaks Seascape* 3 triple has the Creating Ability adaptive seat already installed in the middle cockpit.
    - This adaptive seat provides adjustable trunk support for someone who potentially has a significant decrease in trunk control.

#### Remember:

- When using an adaptive seat, you will need to adapt the spray skirt as well. Put the skirt on last once an individual is seated in the boat with all the necessary padding and support.
- To prevent slippage of the seat, use rubber padding.
- Make sure the foot pedals in the kayak are properly positioned for the individual so that they can provide a brace for maintaining correct body position.
- Be sure to let the participant know that they can always request a break at any time. Taking a break from paddling to stretch helps with fatigue.

#### Tips for Injury Prevention:

- Ask the individual what they do for pressure relief while seated. Keep in mind that it will be slightly different in a kayak, but getting an understanding of how the individual manages other sitting situations will help with the process.
- Always make sure that someone is positioned to prevent an injury if a quick reaction is needed. For example, someone should be behind a participant who is sitting behind the cockpit so that they can catch the participant if they lose balance and fall backwards.
- Correct trunk support and positioning while sitting in the kayak is also vital in preventing skin injuries.
- Most likely an individual who utilizes a wheelchair will have their own cushion – use theirs or make sure to find a cushion that will provide the relief they need.
- When using padding, no hard object should be in contact with the skin. For example, if using an old PFD, make sure no clips or zippers are rubbing against the individual.
- Be aware of any hard surfaces inside the cockpit of the kayak.
- Remember that an individual who has no sensation will not be able to feel anything that is rubbing. It is your job as a Guide to make sure that their body is safe from any type of injury.
- Don't pack the participant into the kayak so that they can't get out.

Become familiar with ETC's adaptive seating equipment. Use your best judgment when creating an adaptive seat for a participant. Have open dialogue and communication to create an environment that builds independence, rapport and safety during the entire kayaking process.

Flow Chart to Distinguish the Need for Adaptations for Trunk Stability:

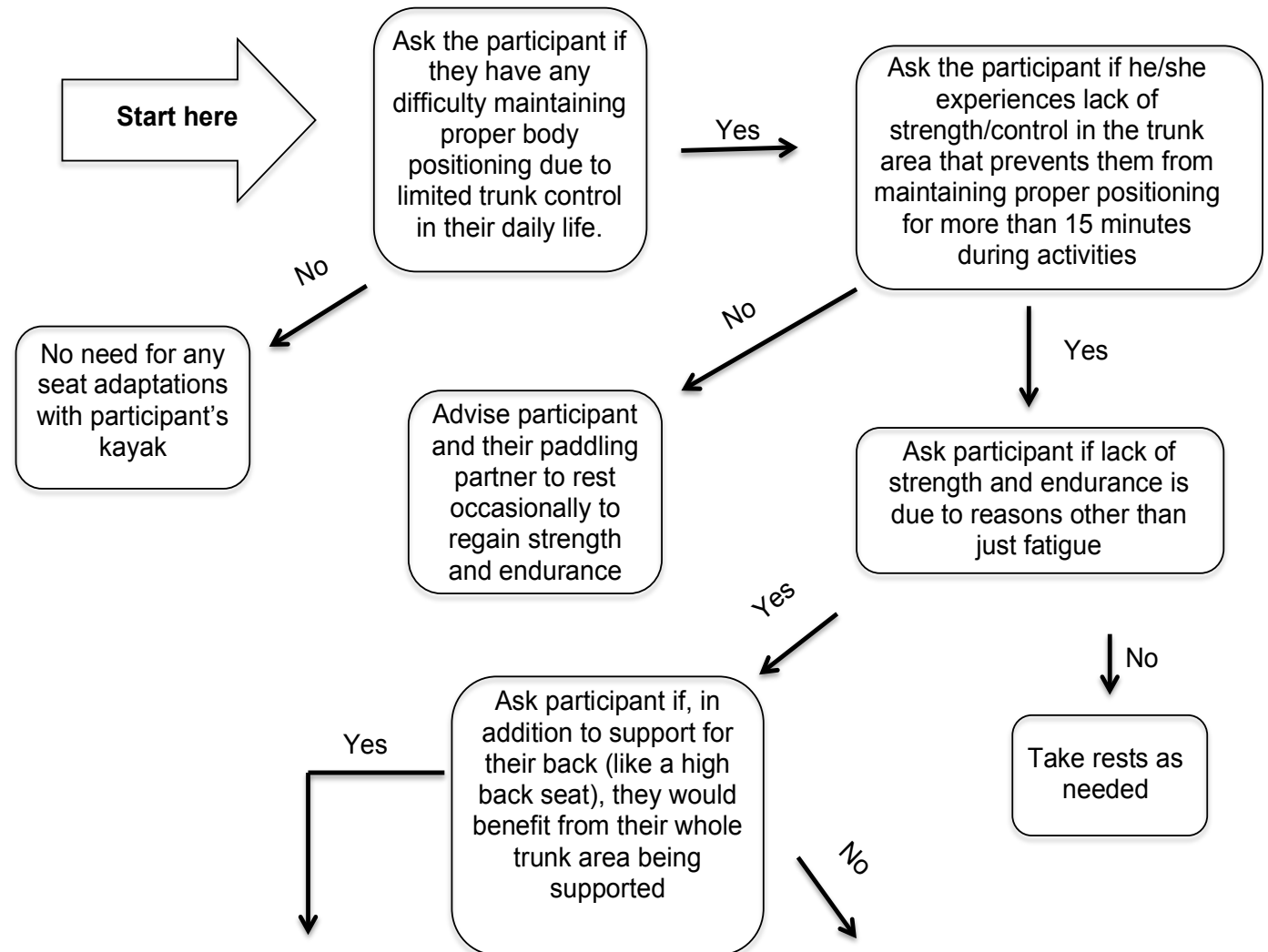
This flow chart can be utilized if you need to figure out the correct type of seat adaptation for an individual. Keep in mind that someone who may require extra back support might not associate it with a medical condition (i.e. back pain from an injury years ago or from maintaining the same position for an extended period).

See next page for flow chart.





# Seat Support for Kayaking



## Trunk Stabilizing

Show participant both adaptations and let them decide which will work best.

### 1) Creating Ability Seat:

Purpose: provides back and lateral support and can be tilted or adjusted for desired level of support.



### 2) ETC Adventure Maker Chair:

Purpose: provides fully adjustable back and lateral support with inflatable cushioning.



## Back Supports

Show participant both adaptations and let them decide which will work best.

### (1) Sit on Top Seatbacks:

Purpose: provides extra back support by doubling the height of the existing kayak seat and also providing adjustable side straps to control the angle of the seatback.



### (2) Crazy Creek Seats:

Purpose: provides extra back support by doubling the height of the existing seat's back.



## Shoulder Limitations

Limitations of shoulder functioning are characterized by difficulty and/or inability of a person to touch the top of their head or to move their shoulder in a circular motion. Having a better understanding of their limitation can provide more information to improvise adaptations as needed.

Ask the participant to think about all the situations in which they need to reach for things in different directions (in front of them, to the right, or the left or right).

- Are there some movements that cause more pain than others?
- Is there a difference when you push or pull?

### Tips for Guides:

ETC does not have any physical specific adaptations for individuals with limitations of the shoulder. Most likely, someone who does not have at least partial flexibility in his or her shoulder would have difficulty paddling. Someone in this situation could be seated in the center cockpit of a triple kayak, where they don't need to paddle.

- Instead of just using your arms, rotate ~~at~~ the trunk using core stomach muscles, to increase power and decrease fatigue in arms.
- Try to always keep your arms within the *Paddler's Box* (elbows at a 90 degree angle) to prevent discomfort and pain.
- Use a paddle with smaller blade – it carries less load and will be easier.
- Use a lightweight paddle.
- Use a longer shafted paddle to facilitate more leverage.
- Rest or stretch breaks will help with fatigue and maintaining good body positioning. Be sure to let your participants know that they can always request a break at any time.
- Adaptations to a paddling stroke can be made as follows:
  - Keep arms below shoulder height to prevent fatigue.
  - Reduce arm extension for a slightly shorter stroke by not extending arms out completely with locked elbows.

### Tips for Injury Prevention:

The majority of shoulder injuries occur during kayaking when direct pressure is placed on top of the shoulder (such as when bracing or rolling). This is usually caused by using incorrect form that increases pressure to the shoulder. On most ETC trips, rolling will not occur and participants will not be instructed to brace. Injury prevention can be as simple as keeping a look out for participants who are paddling incorrectly or getting fatigued quickly, since both can potentially increase the risk of injury. When bracing, always keep your elbows close to your trunk and never reach far above your head with a totally outstretched arm.

Shoulder injuries can also occur when lifting a boat, transferring a participant, carrying a kayak, and getting in and out of a kayak. Since removing boats from storage and pulling boats onto shore after a trip almost always involves a pulling motion, be sure to use proper body mechanics (holding stomach muscles tight, elbows bent, good hand placement, and bending at the knees not the hips) to help reduce the risk of shoulder injuries occurring. When lifting the boats, it is

important to bend at the knees and start in a squat position, so that the power to lift is coming from your legs and not from your back and shoulders.

## **Wrist Limitations**

Limitations of wrist functioning are characterized by experiencing difficulty and/or inability to push oneself up from sitting in a chair (or the kayak cockpit), or limited range of wrist motion. Kayaking requires wrist flexibility and movement to propel boats via paddling.

Ask the participant to think about all the situations in which they use wrist movements – washing dishes, lifting a pot off the stove, folding laundry, etc.

- Are there some movements that cause more pain than others?
- Is there a difference when pushing or pulling?

### Tips for Guides:

- Use a lightweight paddle if available.
- Make sure the paddle is unfeathered.
- Always remind participants to keep their wrists in comfortable, natural position while grasping the shaft of the paddle and have their forearm at a 90-degree angle from shoulders (i.e., don't let hands go past shoulder width in paddle placement – this prevents potential shoulder and back discomfort).
- Participants should practice on land prior to getting on the water to make sure they will be able to manage it on the water

### Adaptive Paddle:

Designed by *Creating Ability* for individuals who have limited to zero finger flexion and therefore can not grasp a paddle, this adaptation is “worn on the wrist and an attachment plate is mounted to the paddle shaft. The wristband then slides into the paddle attachment, allowing full power, rotation and control without releasing. However, it releases easily by sliding the hand out, maximizing safety” (Creating Ability, 2015)

- The primary purpose of this adaptation is to create a system that promotes independence with paddling while not requiring gripping onto the shaft of the paddle.
- It also helps facilitate proper positioning for an individual who may not be able to maintain the same position for a period of time.
- This adaptation can eliminate/reduce pain that is caused by using the wrists to apply pressure while grasping an object and engaging in a repetitive motion.
- ETC has two of these adaptive paddles.



**Overview**



**Bottom View**



**Top View**

**Tips for Injury Prevention:**

See next section under Finger/Palm Injury Prevention for recommendations.

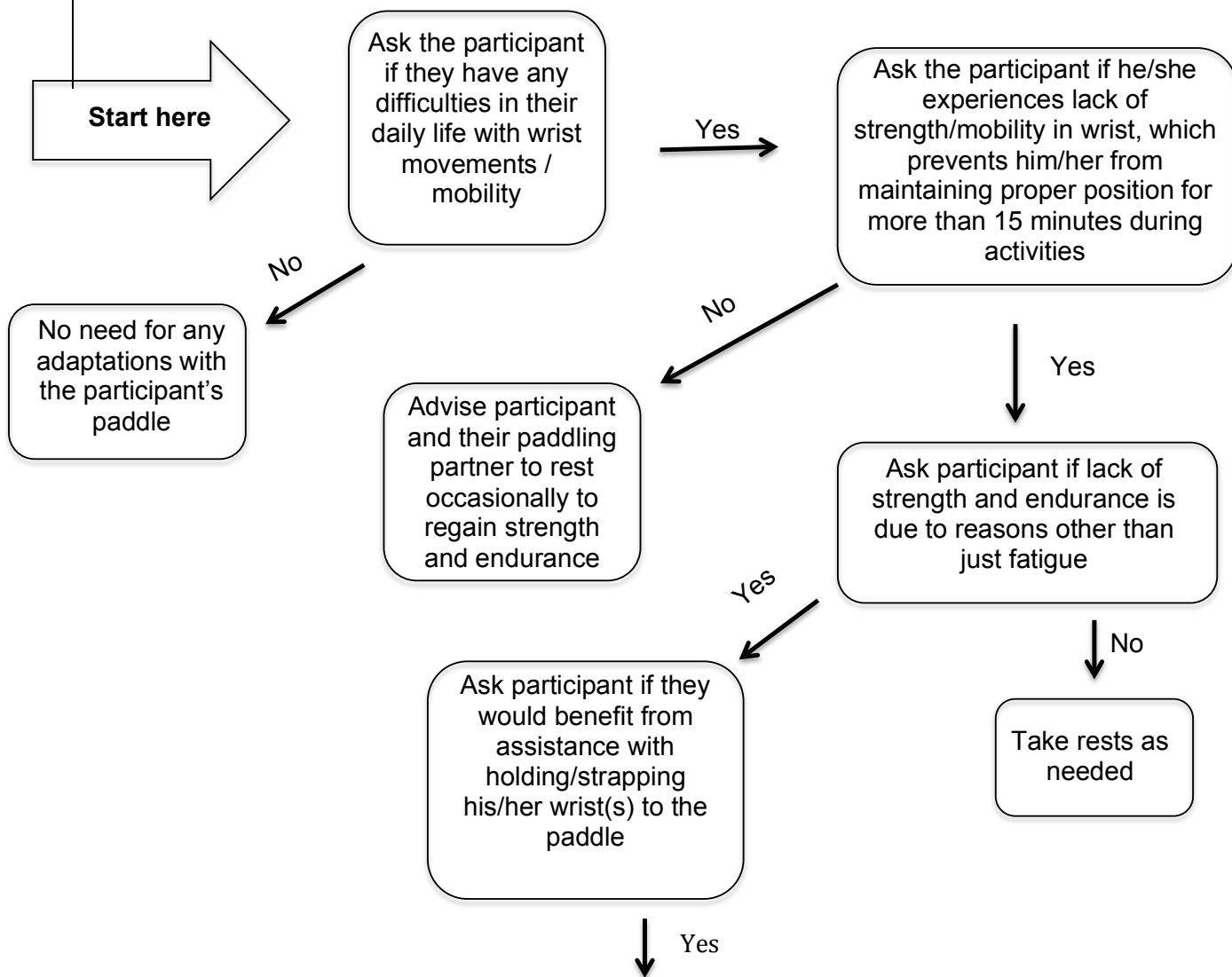
**Flow Chart to Distinguish the Need for Adaptations for Wrist Function:**

This flow chart can be utilized if you feel necessary to figure out the correct type of wrist adaptation for an individual. Keep in mind that someone that may require an adaptation might not associate it with a medical condition, such as pain from a wrist injury that occurred 20 years ago, experiencing pain as a result of repetitive movements, or having arthritis.

See next page for flow chart.



## Wrist Mobility for Kayak Paddling



### Wrist Stabilizer

Purpose: worn on the wrist and an attachment plate is mounted to the paddle shaft. The wristband then slides into the paddle attachment, allowing full power, rotation and control without releasing. It releases easily by sliding the hand out, maximizing safety.



Overview



Top View



Back View



## **Finger and Palm Limitations**

Limitations of finger and palm functioning are characterized by experiencing difficulty and/or inability to grasp an object. Being able to maintain a grasp on the paddle shaft is key in kayaking.

Ask the participant to think about all the situations in which they use grasping motions, such as picking up an object or lifting a plate.

- Are there some movements that cause more pain than others or that are difficult to complete?
- Are there times when you are not able to grasp something for more than a few seconds and then need to let go due to fatigue or pain?
- Is it easier to grasp objects that are wider?

### Tips for Guides:

- Use a lightweight paddle if available.
- Make sure the paddle is unfeathered.
- Remind participants to keep a relaxed grip on the shaft of the paddle.
- Paddling is a push-pull action. Remind participants to use their palm to push forward and that the pulling action should be more of a guiding motion rather than an effortful action.
- Participants should practice on land prior to getting on the water.
- Make sure that hand adaptations are comfortable – you can use moleskin or other materials to relieve any pressure points.

### Tips for Using Paddle Adaptations:

ETC has various types of adaptive paddles to help with finger and palm limitations:

#### **1. Hand Adaptations:**

- These paddles make finger and palm grip easier by offering support to the back of the hand with a device that helps provide pressure and stability for individuals who may not be able to hold the paddle securely.



## 2. Duct Tape Anchoring:

- Designed to orient an individual to correct hand placement so that the blades of the paddle face the right direction.
- This adaptation is simply a small item (piece of wood, etc.) on the right side of the paddle shaft that is covered in duct tape and in line with the blade of the paddle.
- This helps an individual know where their fingers and palm should go in relation to the proper position of the paddle blade.



## 3. Foam Grasping Support:

- Purpose: Increase diameter of paddle shaft to make it easier to grip
  - Used for someone who has discomfort or pain when making a closed fist, such as someone with arthritis or a finger injury
  - Enables a participant to grip the paddle with more ease and comfort, allowing greater endurance
  - Can be used on any type of paddle with easy installment



#### Tips for Injury Prevention:

The key to injury prevention is correct positioning of the fingers and use of a proper gripping technique.

- Using an unfeathered paddle decreases the potential for incorrect hand placement.
- Have a participant use a lightweight paddle to reduce the amount of strength required to grip the paddle.
- During the *Paddle Talk*, make sure Guides monitor how individuals are demonstrating each stroke to adjust incorrect movements right away.
- To conserve energy and prevent injury, keep both hands relaxed.

#### Flow Chart to Distinguish the Need for Adaptations for Finger/Palm Function:

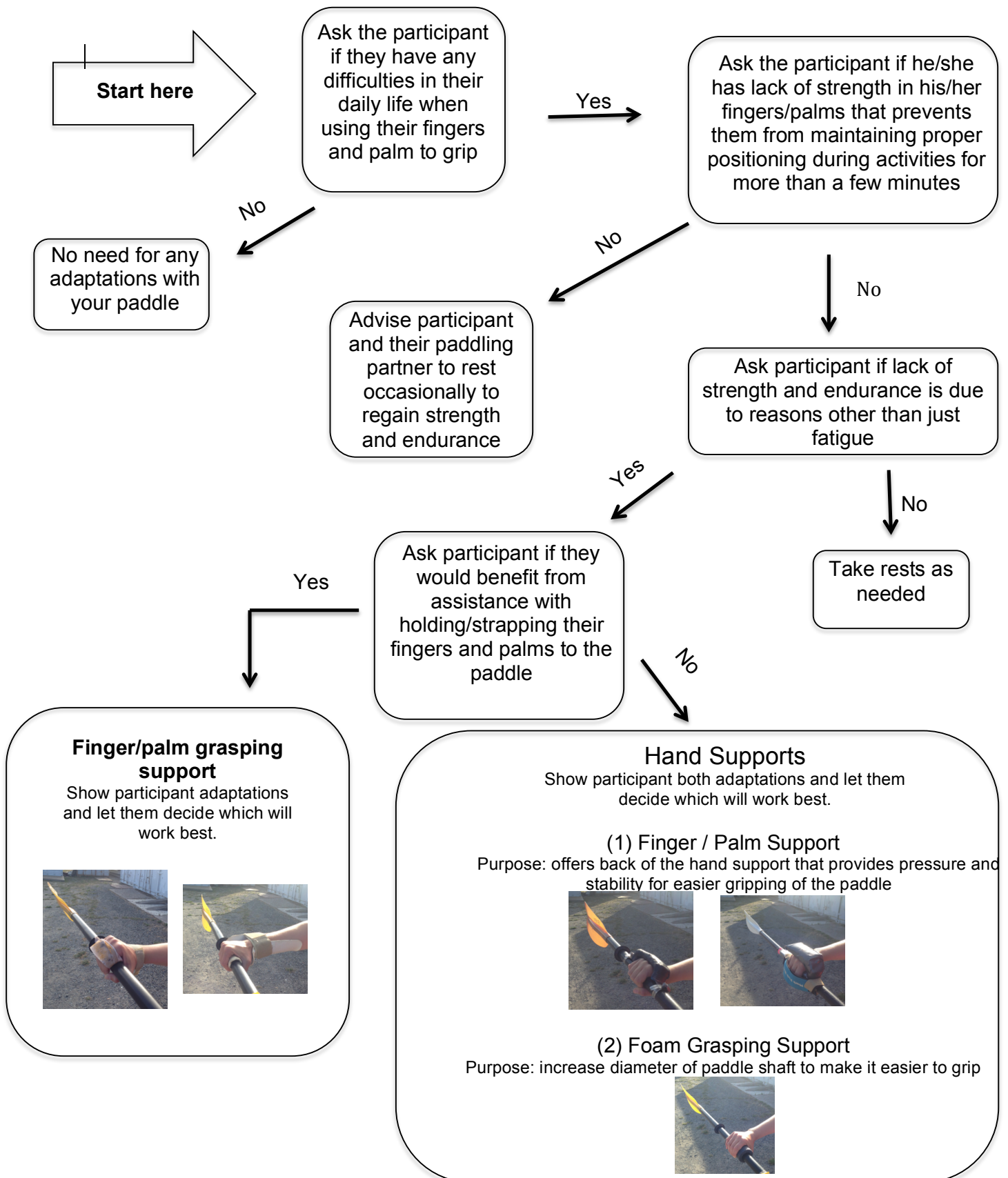
This flow chart can be utilized if you feel necessary to figure out the correct type of finger and palm adaptation for an individual. Keep in mind that someone who may require an adaptation might not associate it with a disability (i.e. pain from arthritis or repetitive movement).

See next page for flow chart.





# Finger / Palm Grip for Kayak Paddling



## Padding and Cushioning

Padding is extremely important to make a kayaking trip comfortable and safe for participants. ETC currently has numerous old PFDs and various sized adjustable cushions, such as small blow up pads or paddle floats.

Padding helps to assist with:

- Maintaining upright posture
- Pressure relief
- Comfort while seated
- Proper positioning of upper and lower body parts

Tips for padding:

- Stuff old PFDs inside the cockpit so that a participant's legs are braced against them. This will help prevent slipping forward and maintaining proper positioning while paddling.
- Ask the participant what they think will be the most comfortable for them.
- Bring all adaptive gear in boxes to the beach to provide options.
- Do NOT pack a participant with padding so tightly in the kayak that they can't get out.



**Various types  
of padding**



**Example of  
padding inside  
a cockpit**



## Toileting Adaptations

Many participants may require adaptations for toileting. This could be related to a medical condition, such as spinal cord injury, or just apprehension around going to the bathroom in an outdoor environment.

ETC has a variety of toilet adaptations that are stored with other adaptive equipment. Some clients may want or need help transferring to a toilet, so be sure to ask if any assistance is needed (see Safety during Transfers, pages 132-138)

If a trip is paddling to a location without accessible toilet facilities, make sure to bring the toilet kit (stored in a dry bag). ETC toilet kits contain toilet paper, hygiene bag, gloves, paper bags, *Ziploc* bags, and hand sanitizer.

### Toilet Adaptations:

- Privacy Tent
  - This tent is used during trips for participants who may feel uncomfortable going to the bathroom in the open environment. All adaptive toilet equipment can be placed inside the tent to create a private toileting area.



- Camping Chair Toilet with Toilet Seat and Hygiene Bags (*Wag Bag*)
  - This adaptation is used for individuals who require upper body and lower body support when using the bathroom.
  - The high back and armrests of the camping chair provide support, while a plastic toilet seat (used with a *Wag bag*) fits over a hole created in the camping chair.



- Raised Toilet Seat / *Groover*
  - This toilet seat is used by an individual who has adequate balance to sit on a toilet but may have difficulties holding themselves up in a squatting position.
  - This seat allows an individual to have support in a seated position without requiring a lot of strength in the lower body.
  - Used in combination with a *Wag bag*.



- Pee Bucket for Females



Remember:

Inform the participant what adaptations are available, but always ask which adaptation they would prefer.

# Kayaking Adaptations for Persons Experiencing Disability

The purpose of this section is to provide an overview of general guidelines, tips and suggestions for sea kayaking with individuals with different types of disabilities.

## Remember:

Individuals with a disability vary greatly with their abilities and limitations. These guidelines are general and should be adapted and tailored to each individual. Be creative, empower your participants, and make the process collaborative and exciting.

## General Tips for Working With All Participants:

- Communicate the overall plan for the day during the opening circle. This way, participants will feel like they are part of the process and are more likely to feel comfortable asking questions that address any concerns or apprehensions they might have.
- Remind participants to:
  - Always paddle using trunk rotation to reduce fatigue in their arms and hands throughout the day
  - Drink lots of water throughout the day
  - Have a snack accessible if needed
  - Wear clothes that will dry quickly if wet (avoid cotton when possible)
  - Wear extra warm layers with paddling jacket if it turns cold/wet

## **Persons with Developmental Delays**

- Provide clear and concise instructions using short, simple sentences. Tactile and visual cues can be helpful. For example, when discussing the plan for the day, use a map to point out exactly where the group will be kayaking.
  - Tip: Using a 1, 2, 3 approach can help keep everyone on task. For example, first we are going to put on our gear, next we will do the safety talk and demonstration, and then we will get in the kayaks. Repeating these steps as they happen can help individuals be prepared for the next steps.
- Point to or hold physical objects while talking.
- Minimize kayak terminology. For example, it is fine to say front and back instead of bow or stern.
- When you notice a participant is not paying attention while you are explaining something, such as during the *Paddle Talk*, call them by name (e.g., “Doug, would you hold this so everyone can see) to re-engage them in the process.
  - Tip: If they continue to seem distracted, give them a few minutes and then attempt to re-engage them. It can take someone a longer time to process information and having a break can help.
- For some individuals, lacking awareness of physical needs is common:
  - Remind individuals to drink water.
  - Remind individuals to go to the bathroom before getting in the kayak.

- Take frequent rest breaks during kayaking, for example paddle for 10 strokes, then rest for 10 seconds.
  - If someone looks uncomfortable, ask. Individuals may not be able to express discomfort.
- Be observant and pay attention to non-verbal communication, since some participants may have difficulty expressing needs.
- Visually and verbally demonstrate all steps. Break down movements into discreet steps (both visually and verbally) for essential skills. For example, when practicing the forward stroke, have all individuals sit in the sand as if they were seated in the kayak. With simple verbal instructions, have all individuals imitate the Guide's demonstration.
- Repetition of instructions will help participants remember the steps.
- To make sure participants understand the process, ask questions of the group in a simple and concise manner.
- Utilize the colored duct tape (on the shaft of the paddle) and ETC sticker (on the right paddle blade) as anchors to help individuals orient themselves and to ensure they are paddling correctly. If you notice an individual is not holding the paddle correctly, you can then ask "Where is the ETC sticker?"
- Provide positive comments to increase motivation and over and over which describe the action they are doing. For example, rather than saying, "Great job," state, "You're doing a great job digging your paddle into the water."
- Remember, everyone will have different levels of ability. Just being able to get into the kayak may be a huge accomplishment. Praise the little things and understand these might be the goal for the day.

### **Persons with Visual Impairments**

- When talking, always begin by stating your name so that an individual can identify you as the speaker. Don't leave in the middle of a conversation without letting the person know.
- Make sure to give an overall picture of the day so participants know what to expect.
- Determine the level of visual loss:
  - Ask the participant "What can you see?" (Zeller, 2009, p. 58). By asking this question, you will get detailed knowledge from the participant about their vision so that you can determine what adaptations will be needed to make the trip fun and safe.
  - However, do not ask too many questions about a person's condition. Let them talk about it if they want to – some people are less comfortable talking than others.
- Pair a visually impaired individual with an individual/Guide who have no visual impairments in a double (or triple) kayak. The participant with the visual impairment should sit in the bow cockpit, while the sighted individual should sit in the stern cockpit because this is the steering position.
- Ask the participant "How should I describe something to you?" or "Would you like to..."
- Are they familiar with the "clock method" (Zeller, 2009) to describe where something is? For example if your boat is facing 12 o'clock, at 3 o'clock there is a harbor seal swimming in the water.

- Ask the participant if using “right” or “left” is useful in locating objects.
- Provide hand over hand demonstration when needed to make sure the participant understands the various paddling movements - ask first, and then stand behind the individual during the *Paddle Talk* while placing their hand and arm on top of yours to demonstrate a forward or backward stroke.
- Relate certain motions, such as sitting down inside the cockpit, to everyday tasks such as sitting down in a chair.
- Use tactile (touch) methods to help orient an individual by having the individual touch the cockpit coaming and the seat inside the cockpit to better orient the participant to where they will be sitting, along with providing explicit and detailed verbal descriptions while performing the task.
- Practice safety sounds and signals prior to getting on the water to avoid any complications when on the water. Refer to Chapter 2 of the *Sea Kayak Guide Manual* for whistle signals utilized during an ETC trip.
- Communicate clearly and concisely but with details as needed to maintain a safe, respectful and exciting environment during the entire kayak trip.

### **Persons Who Use a Wheelchair**

- The participant knows the safest way to transfer himself or herself. Ask questions. If they can transfer themselves, let them. Just be there as an assist if needed for safety.
  - You can say something like this: “I am here to help you if needed. Just let me know what I can help with.”
- ALWAYS communicate each step and talk with the participant throughout the process.
- ALWAYS put soft gear on a participant who requires transfer assistance **after** they are sitting in the cockpit. This prevents any complications with straps getting caught or increased bulkiness during the transfer.
- Utilize the beach wheelchair if an individual does not want his or her own chair to get in the sand.
- Make sure the kayak is as close to the water line as possible.
- Some participants may be fearful of transferring into the kayak at the edge of the water. If necessary, transfer the participant into the kayak at a location that is safe and mutually agreeable, and then have as many helpers as possible lift the boat and bring it to the water. This is not generally recommended because it is more strenuous on both the helpers and the boat. However, in some situations – such as a participant who refuses to go kayaking otherwise – it may be necessary.
- Foot pegs can cause foot entrapments, which could potentially result in getting stuck underwater following a capsize. For someone with limited or no leg mobility, adjust their foot pegs to be farther away than usual to minimize this risk. In place of the foot pegs, use padding to help stabilize the individual’s legs inside the cockpit.
  - **Remember:** Be aware not to use so much padding that the participant gets stuck in the kayak in the event of a capsize or is uncomfortable.
- Use adequate padding to maintain upright posture and to decrease skin contact with hard or rigid surfaces that could cause pressure sores.
  - One helpful trick to prevent a participant from sliding forward is to place a wedge of padding that angles downwards towards the back of the seat.



- Consider using one of the adaptive seats described in the above Trunk Limitations section.

### **Persons with Attention Deficit Disorders (ADD)**

Attention deficit hyperactivity disorder is characterized by a persistent and frequent pattern of developmentally inappropriate inattention and impulsivity, with or without hyperactivity” (Reed & Zukas, 2001, p. 6).

- Engage individuals throughout the process as much as possible (for example, have participants help with carrying the boats).
- Build a trusting environment with participants as soon as possible.
- Address negative behaviors, but don’t draw too much attention to the behavior. For example, you could state, “Sue, I would appreciate it if everyone would listen and not talk right now” if a participant is speaking at a time when you expect their attention.
- Encourage good behavior by verbally reinforcing it (i.e. “Nice job, Garrett, with your forward stroke – let’s all follow Garrett!”).
- Provide as much physical engagement as appropriate. For example, don’t have too much down time after lunch, and instead give the participants the expectation that they will soon be playing a fun game and doing a beach cleanup.
- Ask a participant to be a volunteer to help describe or do something. During a demonstration of how to put on soft gear, you could ask for a volunteer (potentially a participant who you notice is easily distractible) and use them to help demonstrate a skill.
- Before launching, consult with staff if possible and use your best judgment in assigning boat partners.

### **Persons with Autism Spectrum Disorder (ASD)**

- When giving instructions, such as during the *Soft Gear and Boat Talk*, make sure to use as much non-verbal communication as possible to engage participants. Point to what you are talking about; if you mention the front of the boat, physically go to the front of the boat.
- When giving instructions, make sure they are simple and follow a logical sequence of steps. First, you will put on the spray jacket – hold up the spray jacket and demonstrate how to put it on – then you will put on your spray skirt –hold up the spray skirt and demonstrate how to put it on – and lastly, you will put on your life jacket – hold up the life jacket and demonstrate how to put it on.
- Structure is important when working with persons with ASD.
  - Have a clear itinerary of where you are going and what you are going to do, and communicate that clearly at the very beginning of the trip.
- Having a variety of games or activities ready (a “bag of tricks”) is helpful, so that when there is down time you can continue to engage the participant. This could be anything from pointing out various animals to a quick game and a riddle.
- Call participants by their name if you see them needing to be re-focused – “Hey John, what is the area you sit in called again?”

- Use a calm, even toned voice to reduce any distractions and to prevent a participant from being startled.
- Provide time for a participant to respond to your question or instruction rather than quickly repeating the question.
- Utilize group or agency staff, as they know the participants the best.

### **Persons with Hearing Impairments**

- **Demonstrations are key!**
- Look at and speak directly to the person. Make sure that you make eye contact with them when giving instructions.
- Speak clearly while using a normal tone of voice. Note: Using a louder voice or shouting can make it more difficult for an individual to understand your words or read lips.
- If a participant has an interpreter with them, continue to provide instruction and tips to the participant rather than to the interpreter – this builds respect and trust and empowers the individual.
- After each instruction, check to make sure that the participant has understood you. Participants should be able to demonstrate back to you what you just taught them. Be patient, as this might take a little longer.
- Hearing aids and cochlear implants are NOT waterproof; make sure this is explained prior to getting on the water.
- If a person has an interpreter or a staff member they work well with, make sure that person is not in the same boat as the participant. Being in different boats allows them to face the individual each other and *more easily* interpret information.
- **On-Water Communication:**
  - Practice on-water communication prior to getting on the water.
  - As recommended by the American Canoe Association, use the Universal River Signals for communication (see below; Zeller, 2009, p. 135).
  - When performing these signals, remember that they only work if all participants can SEE whoever is signaling.
- **Universal Water Signals** (adapted from American Canoe Association – Zeller, 2009):



**Stop (Potential hazard ahead)**



**Help/emergency  
(Waving paddle  
from left to right)**



**All clear**



**I'm okay  
(Not hurt)**

# Kayaking Adaptations for Specific Conditions

## Multiple Sclerosis

Multiple sclerosis (MS) is “a slowly progressive disease of the central nervous system characterized by disseminated (scattered) patches of demyelination of nerves in scattered areas of the spinal cord and brain that result in multiple and various neurological signs and symptoms that in most, but not all, cases appear and disappear (exacerbation and remission) (Reed & Zukas, 2001, p. 314).”

### General Tips and Adaptations:

- Participants may become more easily fatigued, so continually checking in to see how they are feeling is key to making a trip safe and fun.
- Heat can temporally make an individual's symptoms worse.
  - Tips:
    - Perform the opening circle, *Paddle Talk*, *Soft Gear and Boat Talk* and other activities in the shade to reduce exposure to the sun / heat.
    - Make sure that an individual who requires adaptive equipment (padding or an adaptive seat for trunk and balance control) isn't too tightly packed into the cockpit, as this can increase body heat and result in an increase of symptoms.
    - Find ways to keep participants cool. For example, you can have them dip their hats in the water or dump water on their head – but most importantly ask them what works the best for them.
- In its mild or early form, the symptoms of MS may be minimal: numbness or tingling in the limbs, blurry vision, and loss of balance. In some people, these symptoms go in and out of remission, never worsening. Since it can be hard to predict when symptoms will present, make sure the individual has assistance nearby when getting into or out of a kayak to prevent any injury if balance or vision becomes compromised.
- The late or advanced form of MS can bring exhaustion, loss of strength or coordination, partial or complete blindness, and paralysis.
  - Tips:
    - Take frequent breaks when kayaking.
    - Let the participant know that if they start feeling fatigued it is okay for them to rest while the Guide continues to paddle.
- The variability in MS symptoms and disability levels means that participants with MS may have very different needs and may require different adaptations than they had on previous kayaking trips.
  - Tips:
    - Ask the participant what works for them.
    - Try a few different padding options to see what is most comfortable.
- Some participants with MS may have difficulty with bladder control. Therefore, before a trip it is important to discuss with the participant individually how this should be handled.
  - Tips:



- Make sure to communicate ways and places someone will be able to use the bathroom.
- Provide choices for toilet adaptations.

## **Spinal Cord Injury**

Spinal cord injuries are generally caused by a traumatic event that results in an injury, either temporary or permanent, to the spinal cord.

- Depending on the level of injury, a person is either:
  - A quadriplegic (quad meaning four), where all limbs are impaired or paralyzed, (usually the injury has occurred in the C section (neck) of the vertebrae, or;
  - A paraplegic (para meaning two), where the two lower limbs are affected, usually the injury has occurred in the T (upper back) or L (lower back) section of the vertebrae.
- SCI may also be classified as complete or incomplete.
  - Complete injury means “all ascending and descending pathways are interrupted and there is a total loss of motor and sensory function below the level of injury” (Reed and Zukas, 2001, p. 539).
  - Incomplete injury means, “there is still some degree of voluntary movement and/or sensation present below the level of injury (Reed and Zukas, 2001, p. 539).”
- When the cord is damaged or severed, sensory and motor nerves are not able to send impulses below the level of the injury. Some of the nerves that are damaged can cause a loss of bladder and bowel control.

### General Tips and Adaptations:

- Assistance with transfers may be required – as usual, always ask first what works for them.
- For some participants, loss of bladder and bowel control may occur. Make sure to have a conversation with the individual about how they manage this and be sure to inform them of the adaptive toilet equipment ETC has.
- Since some participants may have a loss of sensation, be sure to anticipate and provide padding where needed to prevent skin irritation, foot entrapment, and temperature control.
- Remember that an individual that does not have sensation in particular parts of their body they will not be able to monitor if they are getting sunburnt, too hot or too cold, or even if they have broken a bone.

**Reference:**

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This manual was created by Dana Kriendler during her 16 week occupational therapy doctorate internship. She graduated from Pacific University in August 2015 and completed this chapter of the Sea Kayak Guide Manual as her capstone project during her internship.