Adaptations and Integration of Paddlers with Disabilities at Canoe Clubs
1- ADAPTATIONS

- Special seats
- Back rest for everyone proposed by the boat manufacturers
- Adaptations « do it yourself »
- Amputee adaptations
- Upper limbs adaptations
- Floats
- Fitting out dock facilities

2- PATHOLOGIES: DESCRIPTIONS AND PRECAUTIONS

3- IMPORTANT TOPICS

- Precautions that should be taken
- Integration at the club
- Recommendations for events
Why do we need to adapt the equipment?

- Comfort (facility)
- Security (for the paddler and the coach)
- Transmission
- Performance
- Integration
ADAPTATIONS : special seats
Adjustable seats

Seat for amputee kayakers
Seats designed by a prosthetist

Pelvic abutment is very important for strength transmission and balance of the paddler
Personalised seat design by a prosthetist

Legs are resting on a long surface. Inclination of the seat toward the back is important to prevent spastic crisis.
USA Seats: http://www.creatingability.com/
Back rest for everyone proposed by boat manufacturers

http://www.dag-kayak.com/
Lumbar support for strength transmission and to compensate for lack of sheathing
ADAPTATIONS « do it yourself »

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Adaptation for amputees
Use of a rudder by amputated leg
Locking of an amputated leg is a must for balance, comfort, and strength transmission.
Upper limbs adaptation
Muff to maintain the hand on the paddle
Help to maintain good prehension: http://www.creatingability.com/
Paddle with only one arm
Clip the paddle to use only one arm
The floats: http://www.creatingability.com/
Inflatable floats
Accessibility to water

Beach Hippocampe: www.vipamat.fr
Loading adjustments
2- PATHOLOGIES

a. Motors
   ⇒ Chair:
      - electrical
        para/quadra, CP, TC, evolutive (myopathies…)
      - manual
   ⇒ Walker:
      - Amputees LL/UL, hemiplegics, CP, para/quadra incomplete, others

b. Visual deficiencies
   ⇒ total
   ⇒ partial

c. Auditory deficiencies
   ⇒ total
   ⇒ partial
Paraplegic and quadriplegic:

METAMERIC SENSITIVE LEVEL:
-Which one?
-Complete or incomplete?
-Functional consequences?

SPASTIC PARAPLEGIA:
spasms, hypertonia, uncontrolled reflex of defence.

SPINELESS PARAPLEGIA:
Weak muscles, amyotrophia, no osteo-tendinal reflexes.
Paraplegic and quadriplegic: Peripheral neurologic handicaps

NEUROLOGICAL LEVEL

- Numbering = spinal column nerve ≠ vertebra
- C5 to T1 = quadriplegic
- Under T2 = paraplegic

IN RELATIONSHIP WITH VERTEBRA (IN GENERAL)

- Cervical = quadri
- Dorsal = para high
- Lumbar = para low
- “Cauda equina” = para low

Paraplegic: palsy of the lower limbs,
Coming up more or less high at the trunk level
(according to the affected nerves)

Quadriplegic: affection going up to the upper limbs

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Paraplegic and quadriplegic:

COMPLICATIONS and PREVENTION:

- Vesico-sphincteral troubles
- Vegetative troubles
- Skin complications
- Osteo-tendinal complications
- Spasticity increase
Paraplegic and quadriplegic:

CONCLUSION PARA/QUADRI :

- Variable portrait
- Ask athlete information on their handicaps
- Rare specific complications in the practice of a sport
- Main prevention (fatigue, tendinitis, spasms…)

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Hemiplegic: Palsy on one side of the body

Encephalic lesion of the frontal lobe or of the connected neuron

Damage hemisphere on the side opposed to the hemiplegic

AETIOLOGY:
- crane trauma
- ACV
- tumours
- infections
- malformations
- diving accident
- Cerebral Palsy (CP)
Hemiplegic:

HEMIPLEGIC MAIN CHARACTERISTICS:
- Right or left
- Complete or incomplete
- Frequent brachium-facial predominance
- Spasticity
- Frequent associated troubles:
  → sensitive troubles
  → visual troubles
  → language troubles
  → epilepsy

CRANE TRAUMA:
- Neuropsychological
- Epilepsy
- Balance troubles
- Orthopaedic troubles
CP (Cerebral Palsy):

- Causes: cerebral suffering ante/during/ or post-natal ; premature (in general : lack of oxygen at birth: late breathing)
- Non hereditary, non evolutive

- Associated troubles:
  → hypertonia
  → abnormal movements
  → disturbed motor pattern
  → visual and auditory troubles
  → spatiotemporal troubles
  → epilepsy
  → orthopaedic troubles
  → different intellectual disease (1/3 of the cases)
- **Amputees:**
  - Aetiology: congenital, traumatic, tumoral
  - Lower limb(s), upper limb(s), poly-amputees
  - Improvement of the equipment
  - Problems at the stump (important hygiene)
  - Sport activity with or without equipment depending on the sport
  - Possible complications due to friction humidity, salted water…
- **Evolutive neurologic handicap:**
  - Myopathy (Duchenne de Boulogne, Becker, …)
    - breathing assistance
    - orthopaedic problem
    - heart condition
  - Heredo-degeneracy spino-cervical (Friedreich, Charcot-Marie …)
  - Spinal amyotrophy …

**Evolutive handicap problems:**
- Aggravation with fatigue
- Aggravation with settled way of life
- Make compromise between physical activity and rest
- Medico-technical assistance often needed
- Sophistication of equipment
- Psychological and social benefits play an important part
- Do not propose long term objectives
Visual deficiencies:

- Aetiology: congenital, traumatic, tumoral
- Precautions:
  - frequent evolution of injuries
  - fragility of eyeballs = avoid traumatisms
  - frequency of falls and collisions
  - watch water splashing depending on the cases.
Auditory deficiencies:

- Aetiology:
  - chronic otitis
  - cerumen plug
  - otosclerosis
  - otospongiosis: calcification that reduce mobility of the stirrup
  - exposure to loud noises
  - absorption of ear’s toxic medication
  - skull fractured

- Precautions:
  - consider removal of auditory prosthesis
  - watch impacts at the implant level
3 – IMPORTANT SUBJECTS

* Discuss with the paddler:
  his/her pathology, his/her true-life sport,
  what he/she is looking for from sport activity.

* The medical certificate and record of medical information
  (Abdos yes/no, level of fatigue, etc.…)

* Importance of tipping (Remember, this can be fun!)

* Watch for skin problems

* Watch the weather (warm/cold) => problems of
  thermoregulation (paraplegic et quadriplegic)
* Assess aspects related to possible incontinence: time on the water, bottle, catheter….

* Assisting the transfer into the boat… watch for the safety of the person and the one who is assisting.

* Safety of adaptations: there should be no risk of jamming in case of wet exit (tip).

• Comfort and tipping: experiment with tipping, validation of tipping and of adaptations is common: discussion helper/paddler =>very important.

• Review all steps of the apprenticeship: wet exit, reloading, safety, choice of equipment…
IMPORTANT SUBJECTS AT THE CLUB LEVEL

• Be Welcoming: ensure the Club environment is accessible to everyone.
• Promote and communicate with other Club members
• Review the accessibility of the Club environment.
• Communicate with the participant: speak directly to the one involved.
• Promote long term participation adapted to the desire, capacity and pathology of the participants.
• Do not hesitate to call on local expert resources
• Opportunity for the Club to “give back to the community”
RECOMMENDATIONS FOR COMPETITIONS

- Appoint a person on the Organising Committee in order to coordinate all matters pertaining to the PaddleAbility races & all accessibility issues.

- Parking spaces for persons with a disability should be convenient.

- All access routes from the parking to accommodation, from accommodation to the regatta venue be accessible. This means a smooth access route which facilitates movement in a wheel-chair or crutches.

- Ensure accessible washroom facilities.

- A special loading area (the docks) is required (loading is longer and need more space due to wheel-chair).
- The height of the loading dock at between 15 and 20 cm from the surface of the water with a minimum width of 1.50 m.

- If there is a ramp to access the dock, the width should not be less than 1 m and the slope should be no more than 10 %. A guard/handrail should be provided on one side.

- Schedule the races to begin no sooner than 10 am (to give the athletes a chance to get ready)

- Provide an area to store the boats close to the dock.

- A tent, close to the loading area, to store the garments and above all, the wheelchairs, the crutches and the prosthesis…
- Provide a tent and related facilities/equipment for a PaddleAbility athlete classification team
CONCLUSION:

BENEFITS OF PRACTICING CANOE/KAYAK FOR DISABLED PERSONS

Physical aspects
- Rediscovery of one’s personal ability (feel one’s own body under effort…)
- Facilitate the use of muscular and functional compensations
- Keeping and improving heart and breathing capacity
- Balance development
- Skill development
Etc…

Socio-psychological aspects
- Social integration into the life of the club
- Feeling of being like all other persons on the water
- Outdoor activity
- Feeling of liberty (equipment non visible or absent)
Etc…

=> IMPROVEMENT OF AUTONOMY AND SELF ESTEEM