Paracanoe
A New Paralympic Sport
Col Deborah S. Page, USAF, BSC (Ret), DVM, MPH
• Chair, USA Canoe/Kayak Paracanoe Committee
• USA Canoe/Kayak Paracanoe coach

Jan Whitaker, B.S. Physical Education
• President, Paralympic Sport Club Western New York and Cape Ability Outrigger Ohana, Inc., a chapter of Disabled Sports USA
• Member, USA Canoe/Kayak Paracanoe Committee
• Chair, United States Canoe Association Adaptive Paddling Committee
• USA Canoe/Kayak Paracanoe coach
Paracanoe includes Kayak and Va’a
Paralympic Paracanoe

- Men and women with physical disabilities (spinal cord injury, amputation, cerebral palsy, Les Autres)
- Blind/visually impaired and intellectual disabilities are not included at this time
- 12 athletes on national teams, one male and one female paddler in each of three classification categories in kayak and va’a
- 200 meter flat water sprint races in lanes 9 meters wide
Single Kayak

- K-1 modeled after able-bodied sprint kayak
  - Same length as ICF Sprint boat (max 520 cm)
  - Greater width - 50 cm width at 10 cm water line
  - Minimum weight – 12 kg
- Nelo Viper 55
- Nelo Viper 60 is more stable
- Viper 51 and many “trainers” too narrow, but useful
- New Paracanoe designs tend to be less stable as they become potentially faster; fastest boat for an athlete is one they can control and paddle with greatest effort without risk of capsizing
Ashley Thomas (TA), Kelly Allen and Tammy Jopson (LTAs) all placed fourth in World Championships from 2009-2012, paddling Viper 55s.
A Paddlers
Carol Rogers (Bridge II Sport) and Vadim Kin (Seattle Canoe/Kayak Club) National Team members
Men’s K-1 LTA Paddlers

Single Va`a

- International Canoe Federation (ICF) Collaboration with International Va`a Federation (IVF)
  - V-1 consists of a rudderless hull and an ama (outrigger) connected by two ‘iako
  - Max hull length - 730 cm
  - Min hull weight - 10 kg
  - Rig ama on either side of hull if design permits
  - Most single outriggers (OC-1s) do not handle well with rudder removed
Anja Pierce, USA, Silver 2012, Bronze, 2013
ICF Parcanoe World Championships
Bob Balk, USA, won Silver in 2011 ICF Canoe Sprint World Championships in Szeged, Hungary
Racing Paddles

- ZRE Power Surge Carbon Outrigger Canoe Paddle
- Epic Length-Lock Mid Wing Full Carbon Kayak Paddle
- Epic Length-Lock Signature Hybrid Kayak Paddle
- Gillespie Hybrid Power Surge Outrigger Canoe Paddle
Paracanoe

Classification
Legs, Trunk, Arms (LTA)

- Minimum physical disability
  - Loss of three full fingers on one hand
  - Amputation of tarsal/metatarsal of one foot
  - Loss of strength and range of motion of one limb (10 pts) or two limbs (15 pts)
  - Typically amputee, spinal cord injury S1, cerebral palsy Class 8
Trunk and Arms (TA)

- Cannot apply continuous and controlled pressure to the footrest due to significant weakness to the lower limbs
- Bilateral around knee amputations or significantly weakened lower limbs
- Transradial (below elbow) amputation
- Typically complete L3 or incomplete L1 spinal cord lesion, Cerebral Palsy Class 5
Arms (A)

- No trunk rotation, arms and shoulders only
- Neurological impairment equivalent to complete lesion T-12 or incomplete lesion T-10
- Cerebral Palsy Class 4
- Likely to have poor sitting balance
- Transhumeral (above elbow) amputation
Paracanoe
Adaptive Equipment
Seating Solutions

- Used in round bottom kayaks
  - Bumfortable Seats

- Used in flat bottom kayaks

- Happy Bottom Pad

- Chesapeake Light Craft
Seat in Nelo Viper 55 kayak

Seat on Concept 2
Creating Ability Seat set up in Tevanui V-1 provides additional back and pelvic support
Creating Ability seat set up in Tevanui V-1 provides back, pelvic and lateral support
Custom Seats
Foot cradles fabricated by Brian Prout, CO Beacon Prosthetics and Orthotics
Sit Ski Seat
Creating Ability Socket set up in V-1 for va’a paddlers with above knee amputation
Creating Ability Socket attached to seat in Nelo Viper 55 kayak

Front View

Top View
Pontoons (Stabilizing Floats)
Adaptations for Paddlers with Upper Limb Amputation

Creating Ability Grip Aids

Slide Hand Grip

Hand Grip Aid

Propel Grip Aid
Indoor Training
Collaboration with Nazareth College Physical Therapy Department

Concept2 with Vermont Waterways Paddling Adapter

Paralympic Sport Club Western New York
Mobility Sports
Sled Hockey
Seat set up on Kayak Pro Ergometer

Photo courtesy of Bridge II Sports/Stephen Knight
Pool Bench Seat
made by Coach Stephen Knight

Bridge II Sports Para Kayak Club
Nelo Viper 55 tethered in pool by Bridge II Sports Para Kayak Club Coach Stephen Knight
Paralympic Sport Club Western New York
Canandaigua VAMC Therapy Pool
Kayak Technique

Power Transmission and Recovery Portion
Power Transmission

- Catch or entry phase
  - Entire blade in water
  - Quick, aggressive, powerful
  - Torso rotated, arm stretched forward
  - Viewed from side, 45 degree angle to water
    - “Positive angle”
  - Viewed from front, 60 to 70 degrees
    - Approaches vertical to take advantage of wing shape
Pull

- Smooth continuation of stroke
- Pull boat past the point of entry
- Powerful torso/shoulder rotation
- Pulling arm straight until final portion
- Paddle tracks away from the hull
- Top arm stays behind bottom hand as long as possible, and crosses center line with rotation
Leg Press

- LTA athlete extends the stroke side knee
- Backward shift of the hip
- Synchronized and leads trunk and arm work
- Opposite knee flexes and hip moves forward
  - Foot strap helpful
- Completes kinetic chain, transfers power on paddle to forward motion
- TA/A must be firmly compressed hip to foot
Recovery Portion

Exit Phase

- Exit phase begins when pulling elbow bends
- Paddle near level of hip, torso just past square
- To the side, having followed path of bow wave
- Lift exit hand to about forehead level
  - WITHOUT lowering the top hand
  - Paddle shaft parallel to water
- Exit cleanly without lifting water or slowing
Relaxation or Air Work

- The end of one stroke and beginning of next
- Set up for next stroke
- Smooth change of direction
- Shoulders lowered, relaxed
- Torso completes rotation
- Maximum extension for next stroke
V-1 Technique

Power Stroke
Body Position

- Sit with pelvis tilted forward, lower back straight, torso bent slightly forward from hips
- Extend legs forward with a slight bend in knees with feet placed on foot brace
Catch Phase

- Hold paddle with top hand on paddle grip and bottom hand on shaft about 4” above the blade

- Form a triangle with top hand, bottom hand and on-side shoulder when paddle is held vertically in the water

- Bend on-side knee by rotating torso and pelvis, extend lower arm

- Drop on-side shoulder forward and down to place paddle in the water at right angle to center line of va’a

- Press DOWN with top hand and contract abs to ANCHOR whole blade in the water (wrist, elbow and shoulder of top arm stay in a line)
Power Phase

- CONCEPT: pull the va’a **up to** and past the paddle, don’t pull the paddle **through** the water
- With blade completely submerged, extend on-side leg and rotate torso and hips to generate power
- Use arms as connectors between power source and firmly anchored blade
- Pull on-side shoulder up and back to neutral so both shoulders are square
- End power phase when lower elbow is even with torso
Exit and Recovery

- Release pressure on paddle at end of the stroke when paddle goes past perpendicular
- Exit should be clean and quick
- Relax hands, lift lower elbow to lead recovery; use arms to recover paddle from water
- Rotate torso to set up for catch of next stroke
- Make the recovery phase faster than power phase
General Comments

- Keep movements smooth to maintain glide of va’a
- Keep weight centered with no extra weight on ama
- Anticipate va’a change of direction; correct early
- Control direction of the va’a by changing (paddling) sides quickly or using correctional strokes
- Rig ama on right or left side to maximize athlete performance
Maximize Ability

- Strive to approximate ideal/able bodied technique within limits of disability
- Adaptations allow athlete to use remaining ability with minimum restriction
- Too much support as detrimental as too little
- Remove motion which does not add to propulsion
- Protect skin, eliminate pressure and friction points
- Practice “wet exit”, especially if banding to seat back
- Reduce support as skill and strength increase
Major Competitions

- USA Canoe/Kayak National Sprint Trials and Paracanoe Regatta (April)
- Endeavor Games (annual – June)
- Lake Placid International Regatta (annual - July)
- USA Canoe/Kayak Sprint National Championships
- International Canoe Federation Canoe Sprint World Championships (non-Paralympic years)
- United States Canoe Association Paracanoe National Championships (annual – August)
- International Va’ a Federation World Sprint Championships (bi-annually in even years)
- Paralympic Games
USA C/K National Sprint Trials and Paracanoe Regatta* April 25-26, 2014
Oklahoma City, OK

*Not a selection event for Paracanoe - First opportunity in 2014 for veterans to meet military time standard

Josh Wold 2012 USACanoe/Kayak Team member in Lane 4
U.S Olympic Committee and U.S Department of Veterans Affairs Veterans Monthly Assistance Allowance Program

- For veterans with exceptional Paracanoe skills and commitment to pursue elite-level competition

- VA pays monthly stipend to qualified veterans who are citizens or permanent residents

- Veteran must achieve the Military Standard at USA Canoe/Kayak Trials, Nationals, or other designated competitions

- Kayak or Va`a must meet International Canoe Federation specifications

- Athletes must have training and competition plans and submit forms and reports to the USOC

## Military Time Standards

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-1M LTA</td>
<td>58.77</td>
<td>K-1 W LTA</td>
</tr>
<tr>
<td>K-1 M TA</td>
<td>66.10</td>
<td>K-1 W TA</td>
</tr>
<tr>
<td>K-1 M A</td>
<td>79.98</td>
<td>K-1 W A</td>
</tr>
<tr>
<td>V-1 M LTA</td>
<td>75.88</td>
<td>V-1 W LTA</td>
</tr>
<tr>
<td>V-1 M TA</td>
<td>83.94</td>
<td>V-1 W TA</td>
</tr>
<tr>
<td>V-1 M A</td>
<td>105.66</td>
<td>V-1 W A</td>
</tr>
</tbody>
</table>
Endeavor Games
Oklahoma City, June 5-8, 2014

K-1 M TA 2013 USA World Paracanoe Team member David Etier racing on the Oklahoma City Race Course
USA Canoe/Kayak 2014 Paracanoe Team Trials
July 6, Lake Placid International Regatta
USA Canoe/Kayak 2014 National Paracanoe Sprint Championships
July 31 - August 2 Gainesville, GA

2012 Gig Harbor, Wa.
2014 ICF Canoe Sprint World Championships, August 6-10, Moscow

2013 Medalists: Megan Blunk, silver in K-1 and V-1 TA; Ann Yoshida, bronze in V-1 A

2011-2012 USCA V-1 Champion

Will Arts Photography
2014 IVF World ParaVa’a Sprints

V-1 Men’s TA Gold
Augusto Perez, PSC
Western New York
2008, Sacramento

August
12-17
Rio,
Brazil

Tammy Jopson, PSC WNY
Resources

• International Canoe Federation –  
  http://www.canoeicf.com/icf/Aboutoursport/Paracanoe.html

• Kayak Power Stroke and Whole Body Rotation –  
  http://www.epickayaks.com/extras/tips/technique/power-paddling

• V-1 Stroke – Alan Carlsson


• Flatwater Racing, Level 1 Beginning Coach by Dan Henderson  
  Cascade Canoe & Kayak Centers, Inc. 425-430-0111  
ICF Paracanoe Boat Dealers

Kayaks

1. Nelo USA
   Contact Michael Martinov
   info@nelousa.com

2. Sprint Kayaks.ca
   Mike Robinson  sprintkayaks@gmail.com
3. Simon River Sports, Quebec Canada  
Builder of Laser4All K-1  
http://www.simonriversports.ca/english/products/kayaks/laser4all.html  
Steve@simonriversports.com

4. CS Canoe Speedmaster (Italy)  

5. Zedtech Kayaks  
http://www.zedtech-kayaks.com/
Va`a

1. Kamanu Composites, Kailua HI
   Builder of Aukahi V-1
   http://kamanucomposites.com/2009/v1
   info@kamanucomposites.com

2. Tiger Canoes and Composites, Kapa`au HI
   Builder of Teva i Tai V-1
   http://www.tigercanoe.com/teva-i-tai-v-1/
3. Pogue Sports, Vancouver BC, Canada
Builder of Tevanui V-1
http://poguesports.com/site/?page_id=37

4. Fai Va`a, Papeete, Tahiti
Builder of several V-1 models including Fai 3X
FaiVaaHawaii@gmail.com, USA dealer

5. Allwave
Builder of Leonardo V-1 and Vanguard V-1, Itlay
http://www.allwave.it/leonardo%202.htm
Kayak Paddles

1. Epic Kayaks
   http://www.epickayaks.com/products/paddles/mid-wing

   Paddle wizard to help select model and length
   http://www.epickayaks.com/products/paddlewizard

2. Fastkayak.com
   http://www.fastkayak.com/wing.html

3. Jantex
   www.jantex.sk/distributors/?sid=223
Kayak and Va’a Paddles

1. Quickblade
   http://quickbladepaddles.com

2. Braca
   www.braca-sport.us
   info@braca-sport.us
Va’a Paddles

1. Zaveral Racing Equipment
   www.ZRE.com

2. Quickblade (Va’a)
   http://quickbladepaddles.com

3. Kialoa
   http://www.kialoa.com/paddles-gear-1/outrigger.html

4. Xylo Bladz
   http://www.xylobladz.com/

5. Gillespie Paddles
   http://www.gillespiepaddles.com/
Adapted Seats

Mobility Sports (Sled hockey buckets)
http://www.mobilitysports.com/#ecwid:category=1487764&mode=category&offset=0&sort=addedTimeDesc

Chosen Valley Creating Ability
http://www.creatingability.com/seating.html

Bumfortable
http://www.gurneygears.com/gear/bumfortable_kayak_seat/

Happy Bottom Pad
Hand Grip Aids

Chosen Valley Creating Ability
http://www.creatingability.com/hand.html

TRS, Inc. TRS Hammerhead Terminal Device
Kayak Ergometers

- Dansprint Kayak Ergometer
  http://uk.dansprint.com/1/1/kayak_ergometer.html

- Kayak Pro SpeedStroke Gym - Kayak
  http://www.kayakpro.com/

- PaddleOne Kayak Ergometer
  http://paddleone.com/
Va’a Ergometer

- Concept 2  www.concept2.com
- Concept2, Inc. – Indoor Rower Model D
  105 Industrial Park Drive
  Morrisville, VT 05661 USA
- Paddling Adapter for Concept 2 Indoor Rower
  Paddlesport Training Systems
  http://www.paddlesporttraining.com/
- PaddleOne Canoe Ergometer http://paddleone.com/
Paracanoe Friendly USA Canoe/Kayak Clubs and Paralympic Sport Clubs
Canoe and Kayak Club at Georgia Tech
Daniel Farmer
750 Ferst Dr
Atlanta, GA 30332
daniel.farmer@gatech.edu
(770) 540-8702

Cascade Canoe & Kayak Centers, Inc.
Dan Henderson
P. O. Box 4173
Renton, WA 98057
425-430-0111
itsfun@canoe-kayak.com
1-888-4U-KAYAK
Gig Harbor Canoe and Kayak Racing Team
Alan Anderson
3225 Shawnee drive NW Gig Harbor, Wash. 98335
Aande15875@aol.com
253-208 6365

IKAIKA Team Hawaii
Honolulu, HI
shelleyoateswilding@gmail.com

Keystone Kayaks
NJ/NY/PA area
Fred Mechini  fmechini@comcast.net
http://www.keystonekayaks.com/
Lanier Canoe and Kayak Club
Nancy Canupp
3105 Clarks Bridge Road
Gainesville, GA 30506
770-287-7888
info@lckc.org

Rice Creek Boat Club
Judi Mikolai, Executive Director
Marsh Jones, Sprint Coach
Director@rice-creek-boat-club.org
Youth focused club.
San Diego Canoe Kayak Team
Chris Barlow, Head Coach
www.sdckt.net
858 273 0063

Seattle Canoe and Kayak Club
Green Lake Small Craft Center
5900 West Green Lake Way North
Seattle, WA 98103
(206) 684-4074
seattlecanoeclub.org
info@seattlecanoeclub.org
South Florida Canoe and Kayak Club
418 SW 3rd Place
Cape Coral, FL
boathouse: 239-443-6527
email: melinda.mack@sfckc.org
www: sfckc.org

Washington Canoe Club
3700 Water St., NW
Washington, DC 20007
Jim Ross
frailey.ross@gmail.com
Bridge II Sports (Paralympic Sport Club)
Durham, NC 27712
Fiona Allen  Fiona@bridge2sports.org  866-880-2742 x4
www.bridge2sports.org

Cape Ability Outrigger Ohana, Inc. (Paralympic Sport Club)
560 Shore Drive
West Henrietta, New York 14586
(585) 292-6107 Jan Whitaker
president@adaptivecanoeing.org
Together, we can put U.S Paracanoe Paddlers on the Podium