

Everybody Rides!



Handcycles, Trikes, and More....Adaptive Cycling Equipment and Program Management for a Community Cycling Program



Disclaimer:

- Policies, Procedures, and Equipment suggestions described in this presentation are examples only and should not be adopted without consideration by your organizations and programs.
- Organizations and Programs are responsible for evaluating any suggestions made in this presentation and picking equipment for their programs based on their own research and developing their own risk management policies.
- Examples of equipment by specific manufacturers are example only and are not definitive lists and and may not represent a company's current products or prices, and are not endorsements for any particular company or product.

Group Ride or Drop-In Model?



BORP's Cycling Center Principles

- Open as often as possible (Now 4 days a wk/ 12 months a year!)
- Fully Accessible equipment storage
- Train riders to be safe and self sufficient
- Allow independent equipment use
- Provide group activities, especially for youth
- Staff and peer support for beginners and people who need it.



Michael Maloney / The Chronicle

from depression to athlete

Making it happen for you...

- Risk Management
- Location Suggestions
- Storage Systems
- **Equipment (cycles and more)**
- Time for Resource Sharing, Questions

Risk Management

- Protect your participants, reduce risk of accidents and injuries; and also reduce you and your organizations' exposure to liability.
- Your responsibility to develop safety policies and rules; AND SEE THAT THEY ARE FOLLOWED.
- Policies and Procedures described in this presentation are examples only and should not be adopted without consideration by your organizations and programs.
- It's time for us to create an association and develop consistent best practices for our programs

General Guideline Suggestions

- Follow Local, State, and National Bicycle Laws and Rules
- Require Helmets, Flags, and Closed Shoes
- Train riders to perform gear and safety checks and make it their responsibility to do so
- Perform Independent Riding Check-Out Test
- Membership Model with levels
- Youth ride only with trained volunteers or parent/guardians
- Emergency Phone Numbers on All Bikes
- Train for Independence and how to seek help
- Bicycle Trailer for bringing wheelchairs to stranded riders and returning damaged equipment from bike trails.
- Insurance and Liability Releases
- Doctor's Release? - BORP doesn't require, I think we should follow the standard of the bike rental industry, which does not require.
- **Risk can be reduced, but not eliminated. Accidents Happen
– Be prepared, not surprised**

Sample Membership Levels

- 1: Ride only with Volunteer Guide or Parent/
Guardian.
- 2: Ride solo on restricted trail; or ride with Level
4 or higher rider or volunteer on all trails.
- 3: Ride with other Level 3 or above buddy rider
on all trails.
- 4: Ride solo on all trails.
- 5: Complete Volunteer Training – Guide others.

Some Safety Concerns

- Pressure Sores
- Sweaty Seats!
- Pressure Points
- Tight Straps
- Seizure History
- Loose Feet/Spasticity
- Exhaustion, Heat, Deydration

Location, Location, Location



- Access to Bike Trails, Safe Riding Roads, Open Areas for Practice
- Parking lots at park entrances
- Corporate Lots and Business Parks

Storage Options

- Dedicated Building
- Shipping container in park or business parking lot
- Mobile Trailer



Bikes and Equipment

- Handcycles **and** Foot Cycles
- Fleet Bikes and High Performance Bikes
- The More the Better
 - Accommodate more people at the same time
 - Less reservations
 - Easier to have two bikes set up differently than to adjust one.

Handcycles

We've been doing this
for a while...photo
from museum in
Ghangzhou,China.
Single wheeldrive
handcycle.
Circa 1950's?



Upright Handcycles



Recumbent Handcycles



Kneeler Handcycle



Upright Handcycles

Pluses:

Easy to transfer

Very Maneuverable

Less Intimidating

Good Visibility

Easy to Fit

Negatives:

Less Safe at High Speed

Can't really go fast

Usually less gears

Usually come with coaster brakes



***Top End Excelerator (XCL) and Excelerator, Jr
Sun – 3 Speed Only***

Recumbent Handcycles

Positives:

More stable at high speeds

Less wind resistance

Better ergonomics

Available with more gears,
and high end components

Specialized Fit*

The Cool Factor!

Negatives

Transfer can be challenging

Less Maneuverable

Less Room for legs

Some people can't straighten
legs in front

Specialized Fit*



Fleet Bike vs. Performance



- Uprights and Recumbents
- Fatter Tires – Put 25-28's on performance bikes.
- Adjustable Seat
- Easily Changed Grips
- High Crank Position
- Space for large riders
- Durable
- Easy to Learn

Intrepid Tourer

Freedom Rider FRH1-A

Top End XCL (upright),

Top End XLT, XLT Pro (recumbent)

Pacific Handy Trike?



New on the market, I don't have any info or experience , but it looks fine, and it's AFFORDABLE. Example of the era of mass produced handcycles beginning.

High Performance Handcycle

- Skinny Tires
- More Gears
- Shifters Often Mounted on Grips
- Closer fit and design



Freedom Ryder FRH1

Top End XLT Pro

Top End XLT Gold (out of production)

Intrepid with hand controls

Top End Force G

Race Bikes

- *Top End Force Series*
- *Intrepid Estrada*
- *Top End Force 2*
- *Bike-On Quad Elite*
- *CarbonBike*



Lean Steering – Freedom Ryder



Components and Adaptive Gear



Brakes:

Backpedal (Coaster)

Lever (Disc or Caliper)



Gearing: Internal vs. External



What do gears do anyhow?

Internal Gears

- Easy to maintain, trouble free
- **Can shift on hills or when not moving ******
- 3, 7, 8, 14,
- Combine with Schlumpf Crank Gear to double.
- Nexus, Alfine, NuVinci, Rohloff.

External Gears

- More range for less \$\$\$
- Can't shift under load or when not moving
- Chains can come off; get out of adjustment more easily
- A little less friction

Internal Gear Ranges

Common 3 x 9 External Gears: 550%

- Nexus 7: 244%
- Alfine 8: 307%
- Nuvinci: 360%
- Alfine 11: 409%
- Rohloff 14: 526%

Schlumpf Crank Shifter (Mtn. Version increases range by 2.25x)

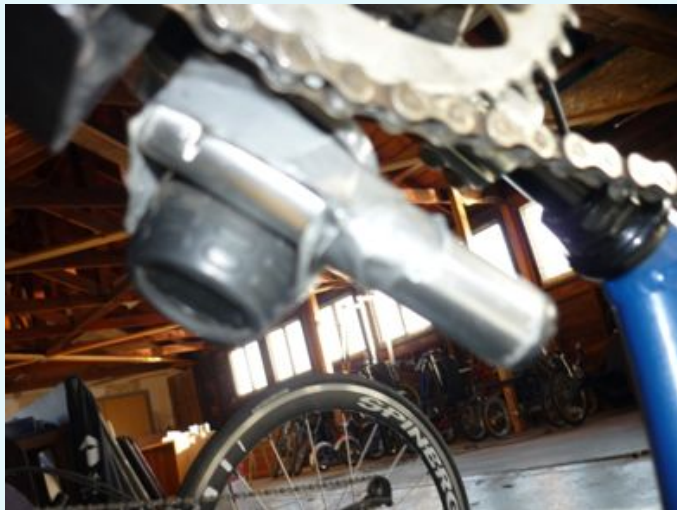
Schlumpf Crank Shifter



Mtn: 250% Reduction

Hi Speed: 250% increase

Adaptive Shifters



Hand Pedals



Bike-On C-5 and Program Pedal



QuadGrips.com



Top End Tri-Pin



DIY Adaptive Pedals



J's Quad Bike



7 Speed Internal Gears, Schlumpf Crank, Backpedal Brakes

Jenny's Adaptions



Bike-On Quad Elite



High Performance Race Bike has external multi gear system but also has custom reverse brake so rider does not have to remove hands to brake.



Freedom Ryder Quadbike FRH1



High Performance bike for quad level sci has pedal mounted shifting and forearm activated brake.



Off Road and Trail Riding

Reactive Bomber



Intrepid Mountain



Reactive Nuke



Lasher



Hase Handcycle



Power Assist



Freedom Ryder FRH1 with Bionix

Foot Power Riders



Kids with CP



Competitive Athletes



Therapeutic Trikes – Fixed Gears



Freedom Concepts
Freedom Concepts
Amtrykes
Rifton
Trailmate
Worksman



Trailmate Lowrider



Worksman PAV



TerraTrike Triton

Some Companies that make affordable low trikes that can be custom ordered as Fixed Gears

High Performance Trikes



DELTA

TADPOLE

Delta

- Tandem Capability
- Easier Transfers
- Easier to Maintain, Cheaper to buy
- Higher seat
- **Little Less Stable**

\$ *Trailmate*
\$\$ *Sun EZ3*
\$\$ *Sun UXB HD*
\$\$\$ *Greenspeed Anura*
\$\$\$ *Lightfoot*
\$\$\$ *Hase Kettweisel*
Others?

Tadpole

- Most Stable at Speed
- **More difficult transfers**
- **Precise Maintenance Needed**

\$ *Terra Trike*
\$\$ *Cattrike,*
\$\$\$ *Greenspeed*
\$\$\$ *ICE, HP Velo, Others?*



Underseat or Handlebar Control



Linked Recumbent Trikes



Riders with:

Traumatic Brain Injuries

Visual Impairments

Post Stroke

Inability to Brake or Steer

Hitches for:

Hase

Greenspeed

Lightfoot

Aftermarket for others



Recumbent Tandem Trikes



Tandem Upright Trike



Freedom Concepts

Case Study: Bruno and Family





Side by Side



Lightfoot Duo

Sun Quadribent (2 EZ1's linked)

Traditional Tandems



- US Association of Blind Athletes
www.usaba.org

Buddy Bike



Trailer Trikes



Hase Trets
Lightfoot Cycles

Excellent affordable adaptive pedal

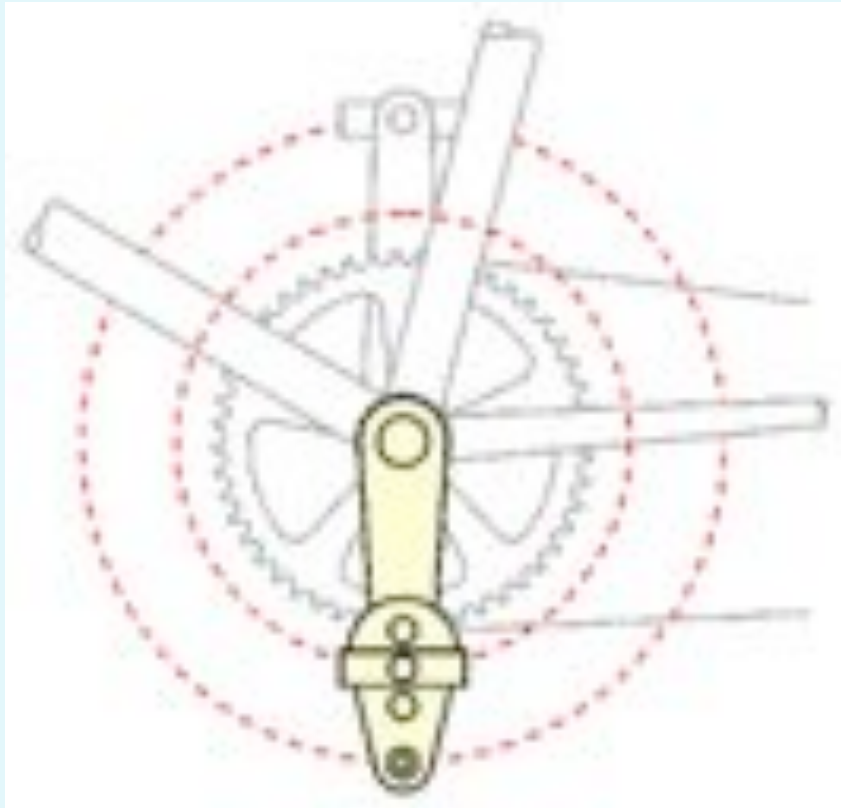


baytrailtrikes.com

Hase Adaptive Pedal



Crank Shorteners and Short Cranks





Greenspeed Anura Program Set-Up



- *Jtek – After market bar end shifters for internals**
- *Double Brake**
- *Hand Rest**

Chain Gobbler – Required if the seat
doesn't move



Bike Questions?

What's the second
hardest part of
handyycling?

Getting on the bike

And the hardest?

Getting off the bike.

Transfer Techniques and Aids













Transfer Aids



Pool Lift?



Leg Placement and Foot Support





Discussion: What are other programs using?

Other Topics....

Cycling for people with cognitive disabilities.

- Challenges
- Resources
- Ideas?



Racing Racing Racing Racing Racing



US Handcycling Federation www.ushf.org



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