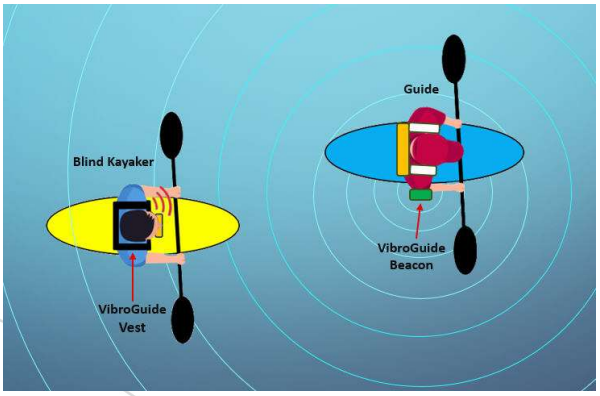
VibroGuide – User Guide

Instructions and orientation of guide and blind athlete

VibroGuide mixes Bluetooth Direction Finding and tactile technologies to augment guidance of blind and visually impaired (VI) athletes. It's intended use is for active follow-me, outdoor sports like kayaking, skiing, snowshoeing, hiking and other activities.



Follow-Me guidance is a when a blind athlete follows behind (or near) a human guide. VibroGuide seeks to reduce issues with classic audible or tether guidance by employing a wireless connection between the guide and blind athlete. This reduces the need for frequent navigation chatter and opens the blind athletes hearing to enjoyment of natural sounds and simple conversation.

HOW VIBROGUIDE WORKS: The direction and distance to a guide wearing a VibroGuide beacon is computed within the vest electronics and is interpreted with tactile vibrations felt around the torso. This allows a blind athlete to "feel" the direction to their guide with heart-beat like pulses. The tempo of pulses provides an indicator of distance to the guide. A built-in speech synthesizer can announce instructions such as "right" "left" and distance to the guide.

SMARTBEACON:
Carried by leading guide. Transmits direction and range signals to Vest. Alerts guide of vest direction/distance changes. Waterproof / shockproof.

VIBROGUIDE TACTILE VEST:
Worn by blind athlete. Receives beacon signals, calculates angle and distance to guide, applies tactile vibration navigation. Waterproof / shockproof.

VIBROGUIDE ENVIRONMENT:

It is important to note that VibroGuide was designed for **OUTDOOR, OPEN ENVIRONMENTS**. It is NOT recommended for indoor/confined areas because "signal bounce" off objects and metal as well as interference from WIFI and electronic appliances can cause errors in signal processing. Likewise, placing the electronics under water or at water level impacts performance because water absorbs radio energy. For kayaking, placing the beacon at shoulder height works well.

VEST USE CHECKLIST:

1) Vest battery charged and installed? See BATTERIES section
2) Lid closed securely? Assure than there are no wires or dirt along lid seal.
3) Vest fitted properly - snug but comfortable?
   - Close to body (not on top of heavy sweater or coat)
   - If wearing a coat, no metal zipper in front of electronics
   - Make sure ends of vibration belt are tucked UNDER straps - not sticking out. Use small orange or blue Velcro keeper straps to secure ends of vibration belt.

VEST BUTTONS:

POWER ON / OFF Located on left side (facing outward).
- Press in once - latches to power on.
- Press and pop up to power off.

MODE Located on right side (facing outward).
- Momentary press to force mode change between IDLE and START modes (in case voice is not working).

VEST VOICE MODE COMMANDS: Say wake-up word "***VEST***" - wait for "***Ready***" response – then…

HELP Announces a list of available commands and settings

IDLE Vest is power on, connected to beacon, no beep, vibration is very light.

START Vibration motors at full power, beep when centered. Tone changes to high pitch when drawing close… low tone when drifting backward.

SQUAWK Same as START only voice announces distance (in feet) and direction.

QUIET Same as START only voice and beep is turned OFF.

Speak clearly into microphone located at top of electronics box.

VEST VOICE SETTINGS (OPTIONAL): Say wake-up word "***VEST***" - wait for "***Ready***" response – then…

VIBRATE HIGH Issue this command to apply 100% power to vibration belt
- Useful for large/bulky people to assure they feel pulses easily.

VIBRATE LOW Issue this command to apply 50% power to vibration belt.
- Useful for small/slender people who do not need 100% power.

SPEED FAST Increases frequency of vibration and beep pulses. Useful for activities that require the vest to respond quickly.

SPEED SLOW Decreases frequency of vibration and beep pulses. Useful for activities that can allow a slow response time.

TRACK WIDE Tracks center vibration indicator at 12° (24° total) from each side of center. Useful when environment has few obstacles or turns and you want plenty of room for the vest to follow at a distance.

Speak clearly into microphone located at top of electronics box.

TRACK NARROW Tracks center vibration indicator at 18° (36° total) from each side of center.
- Useful when environment has frequent obstacles and turns and you want the vest to follow closely.

MINIMUM VOLUME Sets voice (not tone) at a low volume

MEDIUM VOLUME Sets voice (not tone) at medium range volume

MAXIMUM VOLUME Sets voice (not tone) at highest volume.

Volume Note: the above volume commands only effect the voice volume. If you wish to adjust the volume of the beeps, you must open the case and turn the beeper volume control.

Settings: Settings are saved so they default on next use.

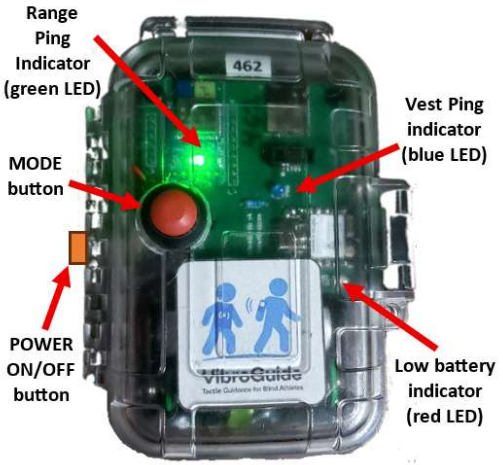
BEACON USE CHECKLIST:

1) Beacon AA batteries charged and installed? See BATTERIES section.
2) Lid closed securely? Assure than there are no wires or dirt along lid seal.
3) Secure beacon in hand/pocket/belt/PFD shoulder (NOT close to water)

BEACON BUTTONS:

POWER ON / OFF Located on lower back, below lid hinge, orange cap.
- Press in once - latches to power on.
- Press and pop up to power off.

MODE Round red button located on top of lid. Momentary push.
- **One push** to toggle beacon modes (Quiet, Squawk, Beep)
- **Two quick pushes** – Sends **STOP** or **START** to vest.
- **Long push** (2 seconds) – Announces battery life in percent



BEACON MODES:

BEEP	Beacon will chirp when aligned on-center with vest.
SQUAWK	Beacon will chirp when aligned on-center with vest as well as announce distance and direction to turn.
QUIET	Beep and Announcements are turned off.

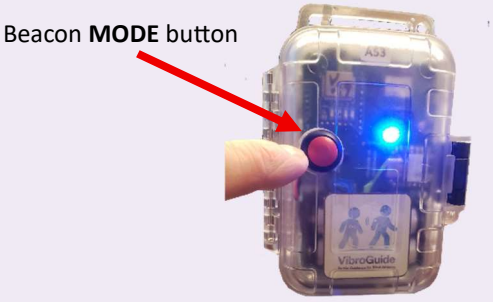
PAIR BEACON TO VEST: Rarely necessary, but if the vest does not recognize the SmartBeacon, simply power **ON** both the vest and beacon and hold the beacon an inch or two from the vest electronics. When the vest is paired with the beacon, you will hear three distinct beeps and the small display in the vest will fill. Also, you will see the vest responding to movement of the SmartBeacon. This may happen immediately, or can take 20-30 seconds for both devices to synchronize.

IDLE and START – putting the vest *"in gear"*:

IDLE: This mode means that VibroGuide is powered up, it is ready, operational and just waiting for a **START** command to begin guiding. When the vest is first powered on, it will announce "**OK**" and will be in **IDLE** mode. If the beacon is powered on and paired to the vest, the vest wearer will feel light vibrations and the guide can observe directional lights on the vest shifting to movement of the beacon. If it is not working and the display on the vest shows **"BEACON IS OUT,"** please review the **PAIR BEACON TO VEST** section above. **IDLE** mode provides an opportunity for the guide to check and verify that the vest and beacon are synchronized. The beacon will show a solid blue light during IDLE.

START: When you are ready to being walking/hiking, skiing, kayaking or just moving, either the guide or the vest wearer can put the vest *"in gear"* with **START** mode. When **START** is engaged, it will cause full power to be applied to the vest vibration motors and both the beacon and the vest will audibly announce **"START…SPACING [xx] FEET."** A pulsing beep tone will be heard from the vest whenever it is centered on the guide. At the same time, the guide will see the blue light pulsing on the beacon indicating the **START** mode is engaged.

BEACON: STOPPING or CHANGING MODES: The guide can toggle between **START** and **IDLE** modes by double-pressing the red mode button on top of the beacon.



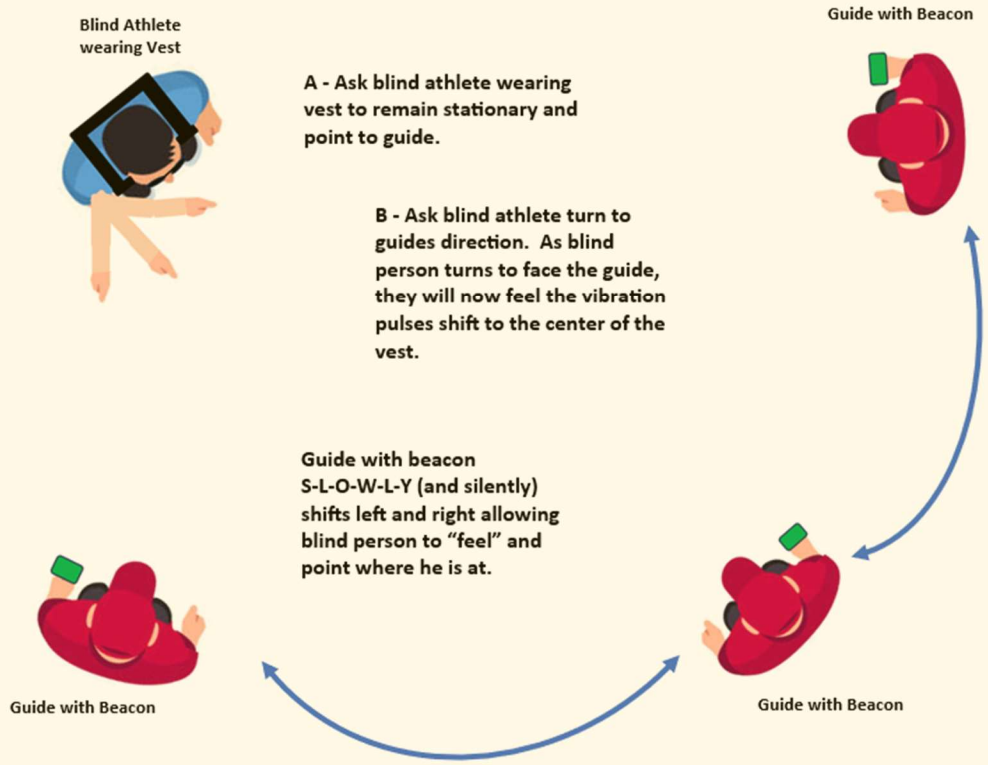
VEST: STOPPING or CHANGING MODES: The vest wearer can toggle between **START** and **IDLE** using one of two methods: Either a single-press of the mode button (right side of the electronics box) or they can issue the following voice command **"VEST"** [wait for READY] then…**"START"** or… to stop or take a break, **"VEST"** [wait for READY] then **"IDLE"**

INITIAL ORIENTATION:

LESSON 1 - How VibroGuide informs direction

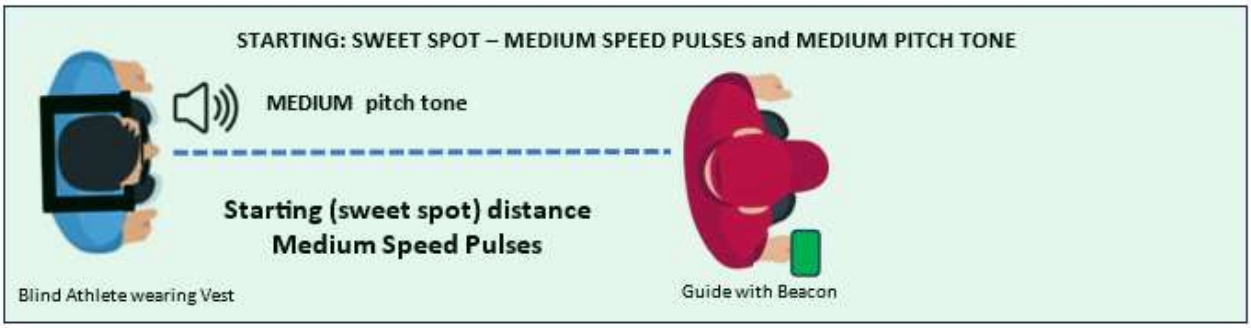
Step 1: With both the vest and beacon powered on, ask the vest wearer to stay in one place while the guide stands about 20 feet away. After the guide initiates START mode, ask the vest wearer to point with their hand to the guide as they **s-l-o-w-l-y** and **q-u-i-e-t-l-y** move to the left or right in an approximate 180° arc. The vest wearer will feel the vibration pulses shift to the side of the vest that is closest to the guide and their pointing hand follow's the movement of the guide. This is to instruct how the blind athlete can follow the guide and verifies to the guide that the vest wearer can easily track on the guide's movement.

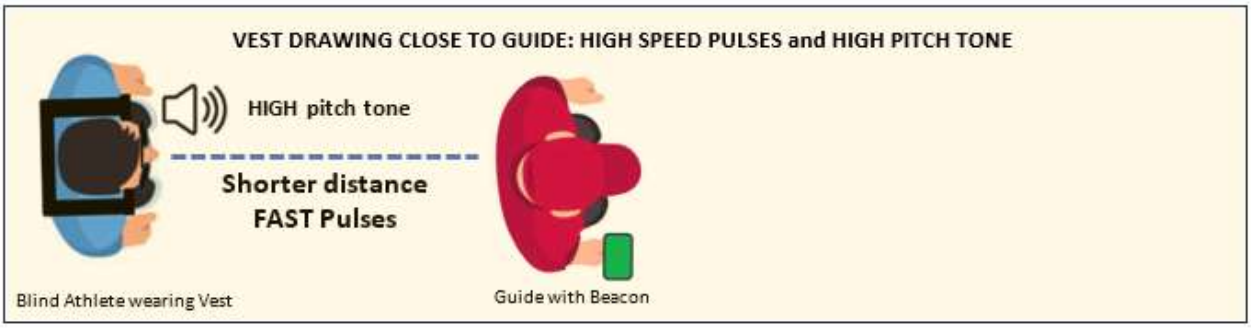
Step 2: Ask the **guide** to remain stationary and ask the **vest wearer** to slowly turn right or left to learn how the vibration pulses shift in the vest when they may veer off course. Note that direction detection will not be accurate if the vest wearer turns with the guide behind them.

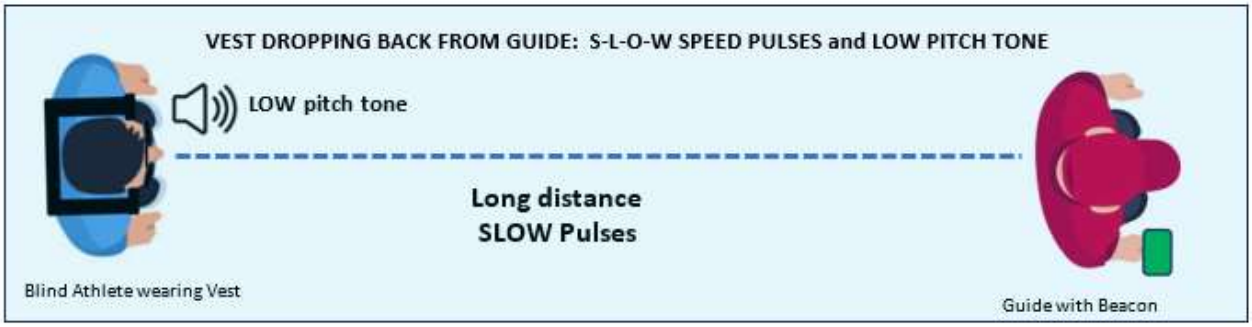


LESSON 2 - How VibroGuide informs relative distance

Example: If a vest wearer and guide are 12 feet apart and the vest wearer gives a voice command "***VEST…[wait for "ready"]…START***" AND if the vest wearer is centered and aligned on the guide… the vest will announce "***START…Spacing… 12 feet.***" This is what is known as the "sweet spot" to set the desired distance that you would like to maintain. The speed of the vibrations felt and tone heard will be of a certain tempo based on the distance between the beacon and the Vest.







VIBROGUIDE TEAM:

Depending on the activity, it may be helpful for a third person to travel near the blind athlete as an assistant. This person can be another set of vigilant eyes scanning for hazards (curbs, holes, rocks, low hanging branches, etc) or simply be there to help describe the environment as needed. Regardless of whether an assistant is used, the primary guide should always maintain vigilance for hazards and travel close enough to maintain verbal communication if/when needed.

GO FOR A WALK!

Once guide and blind athlete understand how VibroGuide works, go for a short, slow walk on a lawn or field. Also, while a blind athlete is learning VibroGuide, keep verbal instructions to a minimum to allow the vest wearer to learn, listen, feel and react to the vest. The blind athlete will quickly learn that as the front guide turns, pulses in the vest will shift to the side of the vest that is closest to the guide. The vest wearer simply needs to turn into the pulses to get back on track. This works the same when the blind person veers off course. ***The more you do it, the better you get!***

LOST BEACON SIGNAL:

If the beacon signal is lost due to accidental shut down or dead battery, the VibroGuide vest will complain by pulsing all vibrators and lights as well as announce **"BEACON IS OUT!"** You can test this by briefly turning off the beacon. When the beacon is turned back on, the VibroGuide Vest will return to operation after a few seconds needed to re-acquire the signal. This works the same in reverse should the vest lose power, the beacon will also complain. This is a safety feature.

GUIDE TIPS:

- **Stay vigilant:** A guide needs to be mindful and communicate safety or hazard information back to their blind athlete. Avoid getting too far ahead! Always stay within comfortable hearing range so that your athlete can hear you and you can hear them. Be aware of any audible or sensory issues that your athlete may have.

- **Twists and Turns:** As you make a turn, VibroGuide signals the vest to turn and if there is a tree or object between you (around which you turned), your athlete may walk into it. When making turns, shorten the distance between you and your blind athlete and take turns wide. This allows extra space to avoid objects on the inside of the turn. When the route ahead of you is straight and clear, you can open the distance while staying within comfortable hearing range.

- **Objects Near Beacon:** When you are carrying the guide beacon in a pocket or backpack, do not place it next to your mobile phone or other metal objects like zippers or keys. Mobile phones emit Bluetooth and WIFI signals that could conflict with the beacon signal. Metal objects like keys, tools or zippers can also absorb or deflect the beacon signal.

- **Traveling (almost) Side-by-Side:** It is possible for the vest wearer to travel next to and slightly behind the guide for conversation. The blind athlete can stay on track by simply keeping the vibrations on that side of the vest - rather than turn into it to center the vibrations. In this way, you can carry on a conversation (almost) side-by-side while hiking, skiing or kayaking. Exercise caution to not let the vest get ahead of the guide. If the pathway narrows, simply inform the vest wearer to drop behind you and find the center pulses. With a little practice, this becomes second nature.

- **Using VibroGuide for Water Sports:** VibroGuide has developed a life-jacket (PFD) that easily accepts the electronics and vibration belt. Both are waterproof. VibroGuide works well for watersports like kayaking but you must be careful to keep the beacon out of and above water. Clipping the beacon to the rear deck of a kayak or a grab loop is **NOT** advised. Wearing the beacon on an arm-band or clipping it to a life jacket shoulder strap is fine as long as it is secure from falling in the water.

- **Using VibroGuide Indoors, near metal or near strong WiFi:** VibroGuide operates in the same frequency range as WiFi, Bluetooth and microwave ovens so interference is possible. Likewise, trying to use VibroGuide inside of a building or around metal objects is not advised as these can cause reflections, interference or absorb radio signals. VibroGuide is designed for outdoor, follow-me sports where there are few to none obstructions between guide and vest.

TAKING A BREAK OR CALLING IT A DAY:

Power down all devices! You'd be surprised how many people forget to power-down and leave the vest or beacon powered on resulting in dead batteries. Remember to recharge the batteries so they are ready for the next adventure.

Also, collect all equipment and store in the VibroGuide case. It is very easy to forget and leave a beacon in a guide's backpack or coat pocket which may go home with them

When shipping or storing VibroGuide for a while, it is recommended to remove all batteries, recharge and store in the VibroGuide case battery box.

MOUNTING VIBROGUIDE ON A MODIFIED LIFE JACKET:

VibroGuide offers a modified life jacket (PFD) that has been fitted with the correct hook-and-loop (Velcro) patches and can accept the Electronics Control box as well as the Vibration Belt. When transferring the electronics box and belt between vests, please exercise care when separating the hook-and-loop as it holds firmly and can tear away from the vest. The below photos show the correct placement of the vibration belt (inside) and electronics control unit (outside / upper chest).

BATTERIES:
With typical operation, battery life should last between 5 and 8 hours. This is largely based on how you use VibroGuide. Optional modes like SQUAWK and SPEED-FAST consume power faster because of processing and audible output demand. You can save battery life by placing VibroGuide in IDLE mode when you are not moving and powering off when taking breaks. Good planning for an event always includes bringing extra batteries for both the beacon and vest and can be carried in a zip-lock baggie withing a backpack.

CHANGING BATTERIES:

1) Choose a dry/stable location to open the electronics enclosure and change batteries. NOT while sitting in a kayak, in rain or where water / dirt might could get inside the device and damage the electronics.
2) **POWER OFF before replacing batteries!** Should go without saying but…. we'll say it anyway.
3) Got good batteries? If you are not certain, test your replacements to assure they are fresh.
4) Carefully unlatch the enclosure cover. This will expose the electronic components. Handle with care!
5) Locate the battery (or batteries) at the lower end of the enclosure.
6) **FOLLOW BELOW INSTRUCTIONS PER DEVICE TO REPLACE BATTERIES.**

BEACON BATTERIES: The beacon device uses two (2) AA batteries. These can be standard or rechargeable. Note that each AA battery should be rated for providing **1.5 volts and 2800 mAh** (or higher) for optimal performance.
1) Lay the device on a flat surface, open lid and locate the double battery holder at the bottom.
2) Gently lift the string or ribbon that runs under current batteries to lift out.
3) Snap new batteries back into the holder paying attention to polarity that is marked on the clip!
4) Be careful not to damage the electronics next to the batteries.

VEST ELECTRONIC CONTROL UNIT BATTERY:
It's not necessary to remove the enclosure from the vest but IT IS ADVISED that the electronic box / vest be horizontal while changing batteries. This is to prevent the battery from falling out when the enclosure lid is opened.

1) Lay the vest on a flat surface and locate the rectangular battery "stick."
2) Gently lift the left side of the battery out about an inch and pull the USB power cable out of the right side end.
3) Hold new battery close and insert the USB power cable. Note that **ONLY 5 volt batteries** are permitted.
4) Lay the battery back into the compartment.

Closing Lids Note: To assure that a waterproof seal is maintained, inspect the rim of the lid where it seals on the box. Look for any debris (remove) or loose wires (tuck in) that my pinch or prevent the lid from closing securely.

BOOT OPTIONS (Consult VibroGuide support before changing!):

There are several boot options that are selectable using the red DIP switch block on the main vest circuit board. These only take effect after the vest is turned off and on (re-boot). Below is a photo of the DIP switch block and a list of the options they change. Note: Boot option changes are rarely needed. CAUTION should be exercised to not disturb components whenever opening the vest electronics box. Note: Up position is ON.

DIP Switch Purpose (numbered 1 – 4):
1 – Filter WIFI. Discards noisy WIFI channels but slows vest response time.
2 – Long Pulse (pause) L2/R2. Causes right-most and left-most vibration motors to pulse longer for emphasis.
3 – Tilt Alarm Enabled. Causes an alarm on both vest and beacon if vest tilts more than 35° (fall alarm – default ON).
4 – Config AT Devices – reloads firmware (do not touch).

DIP Boot Switch Block

CONTACT US:
Questions or suggestions
are always welcome!

Email: Jim.Riley@VibroGuide.com
Phone: 610-836-1923
Website: https://vibroguide.com/

INVENTION STATUS (April 2026):

Patent Pending with the United States Patent and Trademark Office
Title: Apparatuses and Methods for Blind Athlete Guidance
Application#: 63/677,201
Application Type: Utility – Non-Provisional Utility under 35 USC 111(b)
Inventor of Record: James N. Riley

VIBROGUIDE KIT PACKING LIST

1 - Shipping Container – 22 x 9 x 14

1 - VibroGuide Mesh Sports Vest
1 - VibroGuide Vibration Belt
1 - VibroGuide Vest Electronics Box
1 - VibroGuide SmartBeacon

4 - 1.5 volt, 2800 or 3800 mAh, rechargeable AA batteries (2 for SmartBeacon, 2 spare)
1 - AA battery charger
2 – Miady, 5 volt, 5000mAh, rechargeable stick batteries (1 for Vest Electronics, 1 spare)
1 - USB C charge cable

1 - VibroGuide User Guide
1 – VibroGuide Loaner Agreement
1 - VibroGuide User Survey

VIBROGUIDE RETURN SHIPPING ADDRESS:

VibroGuide c/o James Riley
1349 Green Hill Avenue
West Chester, PA 19380

Phone: 610-836-1923
Email: Jim.Riley@VibroGuide.com

VIBROGUIDE LOANER AGREEMENT

Date: ___ / ___ / _____

Period of VibroGuide loan: _____ days (contact VibroGuide to request extension)

Loaner (VibroGuide): Jim Riley T/A VibroGuide - 610-836-1923

Loanee Name : _____ Phone: _____

Shipping costs covered by: Loaner[ ] Loanee[ ]

Loaner (VibroGuide) agrees…

1) …to supply to loanee: VibroGuide vest, vest electronics, SmartBeacon, 4 - AA batteries + charger (beacon), 2 - 5v stick batteries + cable, printed User Guide, carry case.

2) …to waive rental fees for VibroGuide equipment.

3) …to not hold loanee responsible for physical damage incurred during normal use.

Loanee agrees…

1) …to contact VibroGuide as soon as equipment is received and inspected as working (if shipped).

2) …to fully read the VibroGuide User Guide and use equipment safely and as indicated in the guide.

3) …to hold VibroGuide / Jim Riley harmless for any injury incurred during loan period.

4) …to immediately contact Jim Riley/VibroGuide if a malfunction occurs.

5) …to not allow anyone to disassemble equipment or take close-up photos of electronic circuits.

6) …to record issues and suggestions on improvements to VibroGuide and supply to VibroGuide at the end of the loaner period.

7) …to complete User Survey (attached) at end of loan period to VibroGuide.

8) …to capture photos, video or testimonials on using VibroGuide and forward to VibroGuide.

Loaner Signature: _____ Date: ___ / ___ / _____

Loanee Signature: _____ Date: ___ / ___ / _____

VIBROGUIDE USER EVALUATION SURVEY

Guide Information:

Guide Name: _____

Blind Athlete (simulator) Name: _____

Evaluation Date____ / ___ / _____ City, St _____, ____

Visual Impairment Level (check one):

Total Blindness [ ] Visual Impairment (partial) [ ] Simulation [ ]

Description of Activity (examples: walking, hiking, kayaking, skiing):

_____ Indoor / Outdoor? _____

Evaluation Questions:

Does guide have experience in guiding visually impaired? _____

Does blind athlete have experience in activity being tested_____

Did you find the VibroGuide User Guide easy/difficult to follow? _____ Comments: _____

_____

Did blind athlete find vest comfortable to wear? _____ Comments: _____

Did blind athlete find understanding of vest operation easy/difficult? _____ Comments: _____

_____

Did guide find installation / replacement of batteries easy/difficult? _____ Comments: _____

_____

Did guide find operation of beacon easy/difficult? _____ Comments: _____

_____

Did you include any photos / video of VibroGuide being used? _____

Overall impression / comments / suggestions:

_____

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May we use your comments / photo/ video / testimonial for promotion?

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THANK YOU FOR EVALUATING VIBROGUIDE!!