



## **International Police Mountain Bike Association Board Position Paper - Use of Backpacks by EMS Cyclists – May 19, 2014**

IPMBA endeavors to keep abreast of changing technologies, methodologies, and other factors applicable to public safety cycling. This includes equipment and devices for use in training and in the field.

Of interest to certain members is the Board's position on the use of backpacks for public safety cycling, particularly for EMS and SAR use. The former EMS Coordinator (Marc Zingarelli) and Education Director (Mitch Trujillo) completed this position paper, which was reviewed and approved by the IPMBA Board in May 2014.

### **Background**

The IPMBA standard for EMS bike teams operating in any environment and situation has been to carry equipment in panniers and rack bags. Based on the average weight of equipment carried by the typical EMS cyclist, EMS participants in IPMBA Courses are required to perform all skills and on-bike testing while carrying 30 pounds of weight, equally distributed among the panniers and rack bag.

As the use of EMS bicycles has increased, the types of situations and environments in which they are operated have become more varied. EMS cyclists are called upon to customize their equipment based upon the population served and anticipated calls for service, the availability of additional supplies, and environmental conditions such as weather and terrain.

Improved needs assessment and increased specialization has caused some EMS cyclists to evaluate both the equipment carried and the carrying methods. In practice, some have significantly reduced the amount (and weight) of their equipment and have adopted alternatives to panniers (e.g., backpacks.)

As a result, IPMBA has been requested to evaluate the appropriateness of backpack use by EMS Cyclists both in training and in the field.

### **Uses**

There are a number of situations in which bike teams may find it practical to employ backpacks.

- If bike team members have a very basic licensure level and are thus limited in what they are permitted to carry and deploy.
- In situations in which team members anticipate leaving the bike behind to get to a person in need of assistance, which would render the equipment vulnerable to theft.
- In situations in which the initial response team member carries only basic equipment and is supplemented as needed by another team member carrying additional equipment in panniers (e.g., BLS backpack; ALS panniers).
- In situations in which ALS teams are able to divide sufficient ALS equipment between two or more adequately-sized backpacks.
- In settings not conducive to operating a bicycle with a wide profile, such as narrow off-road trails.



## **Advantages**

Backpacks offer greater maneuverability in off-road and technical riding situations. Because they do not carry a rack, a full-suspension bike, which is more practical for off-road riding than a “hard-tail”, can be used. On rough terrain, the impact of bumps and vibrations on equipment is transferred to the rider, and sensitive equipment is less susceptible to side impacts.

A backpack allows the rider to keep their equipment with them, which enhances the security of equipment and controlled substances. It also enables the responder to bring the equipment to the victim’s side even in areas difficult to reach with a bicycle.

## **Limitations**

Carrying weight on the back may affect the rider’s comfort, performance and fatigue level.

A backpack-laden rider is more top-heavy, which may impair balance and enhance the impact of a fall.

A rider with a backpack may experience restricted upper body movement. The height at which the weight is carried compromises normal body weight shifting for balancing and leaning. The rider needs to adjust for stops and turns to compensate for the higher center of gravity. The more weight in the backpack, the more the rider is affected.

## **Backpack Selection**

Comfort, fit, capacity, and compartmentalization should be considered.

The backpack should fit well in the riding position.

Practical features include:

- Grooves and contours to allow for air flow and ventilation.
- Padded, adjustable shoulder straps, wide at the shoulders and narrow to the torso to prevent reduced range of motion.
- Chest and waist straps to secure the pack to the torso, and compression straps that allow expansion or shrinking of the pack to minimize load shifting, and allow adjustment as supplies are used or removed.
- Attachment points for radio microphones, whistles, etc.
- Compartments to organize equipment.
- Water-resistant/proof materials and rain shields.

Depending on the type of pack, backpacks of different sizes from the same manufacturer may be needed to accommodate different sized riders.



## **Load Placement Rules for Backpacks**

EMS providers need to learn how to select, organize, and load the equipment they will need for safe and effective bike operations. Backpacks should enable the EMS provider a means to carry enough equipment for the assignment, yet allow the rider to maintain control.

- A. Backpacks should be laterally balanced as much as possible for maximum operational safety.
- B. Heavier items should be placed low to lower the center of gravity, and place the majority of weight over the hips.
- C. Equipment that is breakable/sensitive should be placed in a part of the backpack that is padded and protected. Outer pockets with soft goods can be used as padding.
- D. Gear with hard or angular edges or points should not be positioned directly against the back.
- E. The most commonly used or most critical equipment should be easily accessible.
- F. Experiment with arranging each piece of equipment in order to determine its proper placement. Packs that have pockets and divided compartments can make it easier to find items in an emergency.
  1. Set-up may vary depending on the nature of the event and the equipment carried.
  2. EMS-specific backpacks with clear compartments (for easy identification of interior items) help to keep things methodically organized.
  3. The pack should not ride so high that it interferes with the wearer's helmet.
  4. Re-assess the set-up after each experience and when equipment is added, removed, or replaced.
  5. Consider diagramming or photographing your "ideal" setup for future reference.

## **Administration**

IPMBA recognizes that in certain situations, backpacks may be the most practical carrying method for EMS cyclists.

IPMBA recommends that the decision to carry backpacks in lieu of panniers be made only after conducting a thorough needs assessment and testing available products.

Because panniers are the predominant method of equipment carry amongst EMS cyclists, and because there may be situations in which panniers may be the only practical carrying method, all IPMBA-trained EMS Cyclists must be capable of operating their bicycles safely and effectively with panniers.

Therefore, all EMS Cyclist and Instructor Course students must complete all on-bike activities and testing with panniers carrying 30 pounds of weight, evenly distributed. IPMBA Instructors are not authorized to waive this requirement for EMS Cyclists who claim that they do not intend to ride with panniers.