



## *Hot Topics Series*

### **Electrostatic Shocks through Headphones on Treadmills**

A number of fitness facilities have been presented with this incident of participants experiencing static shocks through their audio-headphones when using treadmills. Most major manufacturers of treadmills have information that can help your organization manage the issues associated with this type of incident.

#### **Background:**

While the shock can be alarming it is not related to the electrical components of the treadmill in most cases. Instead, it is more often related to the buildup of an electrostatic charge through the interaction of the user and the belt of the treadmill and can be exasperated by low relative humidity in the fitness facility. Electrostatic charges seek a path to ground in order to discharge. When a user builds up a large static charge, the charge seeks a place to discharge to ground. Much like the shock a person would realize when touching the metal screws near a light switch after walking across a carpeted floor, the treadmill user has built up a large static charge and the headphones provide the path to ground. The electrostatic discharge spark occurs from the inside of the ear through the sound opening in the earphone to the speaker inside then through the wiring to ground.

#### **Solutions:**

The best solutions for preventing this type of incident are usually available through the treadmill manufacturer. The following strategies are general in nature:

- Maintain a higher relative humidity in the facility. This limits the amount of electrostatic charge that can be built up. An indoor relative humidity above 50% can reduce most occurrences of the electrostatic discharge.
- Maintain running belts and replace worn belts frequently.
- Encourage users to utilize wireless and Bluetooth style headphones.
- Avoid synthetic work-out clothing. Synthetic and wool materials can generate static electricity; cotton is much less likely to generate large amounts of static electricity.
- The treadmill user can periodically discharge static buildup by touching an exposed grounded metal surface with their hand while running. If done frequently enough, the user will not experience a static discharge through the headphone.
- Carbon rubber soled shoes are usually better for dissipating static charges than silicone based soles.
- The use of *Static Guard* spray has some benefits in helping to dissipate static charges.

More *Hot Topic* information is available from the [Online Resource Library](#).