

A crash course in bicycle safety

Cycling instructor hits highlights on moving down the highway

By DAVID STONE
For the Rocket

Bicycling has gained widespread attention as a viable form of transportation with current high gas prices. However, there is a lot of misinformation about how to bicycle safely. Recent letters to the *Redstone Rocket* have highlighted these misperceptions by both cyclists and motorists.

Crash statistics

To understand bicycle safety, a review of crash statistics is essential. In my courses, the most common fear is that a bicyclist will be hit by a car and hit from behind. So before reviewing crash statistics, I ask these two questions.

First, what percentage of bicycle crashes involve motor vehicles?

Second, what percentage of collisions with motor vehicles involve getting hit from behind?

As for the first question, the largest cause of bicycle crashes is falling off the bicycle. Half of bicycle crashes involve falls. Less than 20 percent involve motor vehicles. In fact, collisions with pedestrians, animals and other bicycles are twice as likely as a collision with a motor vehicle. Most of the crashes I hear of on post involve animals or other bicycles.

As for the second question, crash studies show that only about 5 percent of bicycle crashes with motor vehicles involve the cyclist getting hit from behind. Most collisions, over 85 percent, involve crossing traffic. Either the bicycle

pulls in front of the car or the car pulls in front of the bicycle.

Since the consequence of any bicycle crash, from falling in the driveway to getting hit head-on by a motorist, can result in serious injury or death, bicycle safety must focus on reducing the probability of a collision. One aspect to keep in mind is that what feels safe and what is safe are not necessarily the same. Sometimes what is safe is not comfortable at all and most cyclists try to avoid these conditions.

With these numbers in mind, how can a cyclist operate to reduce the likelihood of a collision? The concept that reduces crash risk the most is called vehicular cycling. John Forester, in his book *Effective Cycling*, says it best: "Bicyclists fare best when they ACT and are TREATED as drivers of vehicles." Basically, a bicycle should be operated with the same rules and responsibilities as any motor vehicle.

Alabama law, as are the laws of all 50 states, is based on this principle. Alabama title 32-5A-260 grants cyclists all rights and responsibilities as any other vehicle on the roadway. Bicycles should operate in the road with traffic.

Why? The reason why cycling in the road with traffic reduces the crash risk is that is where motorists expect to find high speed vehicle traffic. Bicycles easily reach 25 miles per hour on level ground and exceed 50 mph on steep descents.



Photo by Skip Vaughn

COMMUTER— Col. Tom Newman, chief of staff of the Aviation and Missile Command, often rides his bicycle to and from work for exercise.

Segregating bicycle from motor vehicle traffic makes cyclists less visible to motorists and thus increases the crash risks. Visibility for a cyclist is not only what they wear, but also where to cycle.

Keep in mind that there are no minimum speed limits on roads except for controlled access highways and bicycles are restricted on those facilities. Any motor vehicle that slows down to turn has the same impact to other vehicles as a bicycle. Bicycles rarely delay motorists to their destination; they just rearrange the delays that are already built into the system.

Road position

As far left as possible or practicable?

Alabama law defines the position of a cyclist as "as far right as practicable." This does not mean the same thing as "as

far right as possible." Practicable means what is safe and reasonable. A cyclist may be in the left-hand portion of the left most lane and be as far right as practicable. The right one-third of the right most lane, basically the right tire mark, is a good starting point. Then depending on the circumstances the lane position may change further left or right. Since most of the roads in this area are not wide enough for a cyclist and motorist to share the lane, cyclists should use the full lane. Most cyclists want to get out of the way of traffic, but in this case moving further into traffic reduces the crash risk. Most crashes that involve motorists traveling the same direction do not involve getting hit from behind by the front bumper, but hit from the side by the right rear quarter panel. Cyclists that are too far to the right invite motorists to try and "squeeze by" when there is insufficient room. Cyclists also do not have room to react to the motorist's wind blast and may crash after running off the road. Cyclists using the full lane reduce this risk by making motorists pass them as they would pass any other vehicle – in the next lane. The cyclist should also have at least 18 inches of pavement to their right to react to windblast, road debris and other hazards. Most of the commuters I see on post are too far to the right to prevent these types of crashes.

Cyclists should not jeopardize their safety for the convenience of motorists, but what should a cyclist do if traffic is backed up behind them? A courteous cyclist will find a convenient driveway or side road, pull completely off the road and stop while motorists go by. Then once the

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Heat illness a top threat to Soldier health

Take precautions in outdoor activities

By MARY KATHERINE MURPHY

Army Center for Health Promotion and Preventive Medicine

Heat related illnesses are one of the biggest problems that Soldiers face during training. In 2007, there were 329 cases of heat stroke and 1,853 cases of heat exhaustion among active-duty, non-deployed servicemembers, according to the Armed Forces Health Surveillance Center.

Soldiers and leaders must take appropriate precautions and be on the lookout for warnings. The key to preventing heat illness is to be well informed and observant of others when in hot and humid environments.

“Despite the fact that heat injuries can develop into life-threatening conditions, with appropriate training and vigilance on the part of the leadership and individual Soldiers, heat injuries can be prevented,” said Col. David Mukai, an occupational medicine physician at the Army Center for Health Promotion and Preventive Medicine.

Heat rash is a skin irritation caused by excessive sweating. It contributes to decreased evaporative cooling. It can be avoided by keeping skin clean/dry and wearing loose fitting clothing.

Heat cramps are muscle pains or spasms that happen especially during heavy exercise. They can be avoided by staying hydrated, eating properly to keep electrolytes balanced and being acclimated to the environment.

Heat exhaustion is a potentially serious

illness that is caused by working too hard in hot weather. Symptoms include heavy sweating, rapid breathing, mild confusion, uncoordination, and fast or weak pulse. It can be avoided by using appropriate work/rest cycles, keeping hydrated and being acclimated to the environment. Treatment for heat exhaustion includes removing the affected Soldier from training and allowing rest in shade. The Soldier should loosen clothing and take sips of water or a sports drink. Heat exhaustion can become heat stroke.

Heat stroke is a life-threatening illness caused by overexertion in hot weather. The body temperature may rise above 106 degrees F in minutes. Symptoms look like heat exhaustion and include hot skin with or without sweating; rapid, strong pulse; and dizziness. Symptoms may progress to

seizures or severe delirium. Heat stroke can be avoided by using work/rest cycles and staying hydrated (drinking water before feeling thirsty). Treatment for heat stroke includes all treatments for heat exhaustion along with cooling the person's body down as quickly as possible. This is done by using ice sheets (cloth dipped or kept in ice water) placed directly on the skin.

“While heat exhaustion is the more common heat illness and is not associated with injury to the internal organs, heat stroke is a genuine medical emergency and can produce catastrophic multi-organ damage,” Mukai said.

Emergency personnel should be called immediately if symptoms — also including confusion or loss of consciousness, frequent vomiting, shortness of breath or trouble breathing — occur.

■ Cyclists should use same rules as drivers

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road is clear, the cyclist can continue. Motorists should not expect cyclists to move as far right as possible while still moving.

While Alabama law permits cyclists to be two abreast, Redstone bicycle regulations restrict this to single file. This may make it more difficult for a motorist to pass a group of cyclists. Since roads are not designed for single file cyclists to share the lane with motorists, the cyclists still need to use the full lane to reduce their crash risks. Since the group must be single file, this makes the group longer and provides fewer opportunities for motorists to pass. Cyclists doubling up allows for motorists to pass the shorter group in smaller gaps in oncoming traffic.

Regarding sidewalks, shoulders, bike lanes and multiuse paths, many motorists feel that bicycles should be on sidewalks because they impede traffic. First, bicycles are traffic by law so they cannot impede traffic. Second, sidewalks increase the risk of a collision with a motor vehicle between two to four times. Motorists are not looking for high speed vehicular traffic from sidewalks. At every intersection where a sidewalk crosses a road, there is a higher probability of a crash with the cyclist on the sidewalk where the motorist is not looking compared to cycling in the roadway with traffic.

This does not include the risk of a collision with pedestrians, animals (such as dogs) and other bicycles on sidewalks. Other than children younger than 10 years old, sidewalks are not considered usable for cycling. Pedestrians would also not like the risk of a cyclist bearing down at 20-plus mph.

Shoulders

Shoulders can be a viable facility for cyclists. In fact cyclists lobbied significantly for shoulders on Martin Road east. The fact that there are no intersections means that motorists cannot pull out in front of the cyclist on the shoulder. However, debris becomes a significant issue with cycling on shoulders. Because motorists do not use shoulders, the debris that accumulates is not swept away. Debris can cause a fall, the most common crash type. Cyclists must assess if the increased risk from the debris outweighs the risk of cycling in the road with traffic. Shoulders should not be used on steep descents since cyclists are usually traveling the same speed as motorists. Shoulders with too many intersections or where the shoulder turns into a right turn only lane should also not be used. Cyclists risk a collision by continuing straight through the right turn only lane when motorists expect them to turn right.

Bike lanes

Bike lanes are essentially a shoulder with additional paint. They suffer the same risks as shoulders at intersections since

motorists pulling on and off the road cut across the cyclists' path. The proper method for a motorist to turn right across a bike lane with a cyclist is to enter the bike lane behind the cyclist and then turn right. A common motorist caused crash is what is called a “right hook” where the motorist cuts off the cyclist by turning right across the bike lane. Cyclists also cause crashes by turning left from the bike lane. They do not realize they should merge to the left and turn like a motorist.

Multi-use paths

Multi-use paths, such as Huntsville's greenways and the one across post, have their own risks. Remember that collisions with pedestrians, animals and other bicycles are twice as likely as collisions with motorists; therefore the risk of a crash on a multi-use trail is considerable. This risk is why there is a 10 mph speed limit for cyclists on the trail on post. Considering that cyclists can reach 25 mph on level ground, this is a marked increase in the time it takes to commute. Where the path crosses roads, driveways and other facilities, collisions with motorists are also a risk. One estimate is the crash risk increases on multi-use paths an average of 2.6 times compared to cycling in the roadway with traffic. However, depending on the trail design this can increase to a thousand times.

Lights

Another common cause of bicycle/motorist collisions is cycling without

lights at night and in low light conditions. Keep in mind that 85-90 percent of bicycle collisions are due to crossing traffic. Many times a motorist's headlights do not illuminate the bicycle reflectors until just before a collision. Headlights are required by Alabama law and a taillight is highly recommended. These can be visible for miles. Redstone bicycle policy also requires a reflective vest. One of the most effective reflectors is the bicycle pedals. The up and down motion is readily recognized as a bicycle. Cyclists either use pedal reflectors, reflective tape, or a reflective leg band for this purpose.

There is not enough space to go over the all aspects of bicycle safety. There are a lot more specifics to road position, but this hits some highlights. Properly fitted helmets and bicycle inspections are also important safety issues. The cyclist, and only the cyclist, can assess where on the road they need to be to best reduce their risks. The courses I teach provide a toolkit for cyclists to use based on the road, the traffic, the weather, the time of day and other factors.

Editor's note: David Stone is a league cycling instructor with the League of American Bicyclists. He is also a materials engineer with the Aviation Engineering Directorate in the Aviation and Missile Research Development and Engineering Center.