

# Shell Safety Clinic

## Basic Equipment Check

**Shoes** – Laces and/or Velcro should be strong and in good shape. Cleats should be securely fastened to shoes.

**Handlebars** – Press down on brake hoods with all your body weight. Bars should not slip. Check for end plugs.

**Saddle** – Check seat rail binder bolts and attempt to twist saddle, see that it is straight.

**Brakes** – Attempt to twist levers on the bars, they should not move. Squeeze the levers hard to check for cable slippage. Look to see if the brake pads are centered and not rubbing the rim.

**Tires** – Inspect for cuts and broken threads on the sidewalls. Inspect tread for cuts and imbedded glass. Check for adequate pressure.

**Wheels** – Squeeze spokes in pairs to check for tightness. Spin wheels and inspect for trueness. Check skewers for tightness.

**Drive Train** – All gears should be shifted while on bike stand or with rear wheel lifted. Check for stiff links by pedaling backwards and watching at derailleur for chain “lump”. Chain should be properly lubed.

**Pedals** – Inspect toe clips for cracks and toe straps for excessive wear. Clipless pedals should be lightly lubricated and the shoe tried to see if the cleat properly engages and disengages.

**Water-bottle cages** – Inspect for cracks and check tightness of bolts.

**Saddle Bag** – Check for wear on retention strap. Check for necessary tools and inspect for wear on spare tubes. Restock spent CO2 cartridges.

# Bike fit

## **Saddle Height:**

Formula 1: (simple and quick) While bike is in a trainer or supported by an assistant, cyclist unclips both feet and puts heels on top of pedals and pedals backwards. Saddle height should be the point where heels maintain contact with pedals without the hips rocking from side to side (this method usually leads to a lower saddle height than other methods).

Formula 2: Cyclist stands in cycling shoes with feet two inches apart while holding a book or broomstick in a horizontal position pulling it up firmly between the legs. Multiply the distance (floor to crotch) by 1.09 to the distance from the center of the pedal spindle to the top of the saddle when the crank is parallel with the seat tube. The top of the saddle is the cupped part where one sits and not the tip or the back of the saddle. (This method usually will be the upper limit to saddle height)

Formula 3: Multiply the inseam measurement (from formula 2) by .883 to get the distance from the center of the bottom bracket to the top of the saddle (This method usually gives the lowest height)

## **Fore/Aft Saddle Position**

With bike on a trainer, pedal for 5 minutes to settle in. Have a partner bring your right crank arm parallel to floor. Run a plumb bob from front of knee toward pedal. Move saddle fore/aft until the plumb line bisects the pedal spindle. This would be the maximum forward position and should only be used by cyclists who ride short distances at higher cadences. A neutral position would have the plumb line fall 1 cm behind the pedal spindle.

## **Saddle Tilt**

The saddle should be set either level or slightly elevated front end. Place a carpenter's level on saddle to determine proper tilt. Some women prefer to tilt saddle slightly downward to relive pressure on the peritoneal area. Some men may also opt to a slightly upward angle, but this is not suggested because it may lead to urologic or neuropathic problems.

## **Upper Body Position**

Cyclist typically will adjust reach length for comfort, leveling of conditioning and what can be maintained over the race or training distance. To find the proper stem length, the cyclist should be seated on the bike with the arms bent comfortably, the hands in the drops and the head looking forward. Drop a plumb line from the tip of the rider's nose. The proper position for the plumb line is bisecting the handlebars in the center of the stem

## **Handlebar Width**

The width of drop style handlebar should be determined mostly by shoulder width. Measure across the body, from shoulder blade to shoulder blade. Wider bars offer good leverage for climbing, but too wide a bar may make handling difficult. Here are some guidelines:

- Shoulders less than 38cm: 38cm bars
- Shoulders 38-40cm: 40cm
- Shoulders 41-45cm: 42cm
- Shoulders 46cm or more: 44cm

# Cycling in Traffic

**Riding the Road** – Understand the traffic laws and how they apply to bicyclists. Please check with local and state laws regarding specific rules for road cyclists. It's important to think of bicyclists on the road as vehicles. We are obviously not motor vehicles, but we are still vehicles in the eyes of the law. One common misconception is that bicyclists and motorists have different rules. We both have to follow the same laws. Usage of the road and highways is a privilege not a right; no one has a constitutional right to the road.

**Traffic Theory** – The five basic traffic principles are:

- **Right side of the Road** – In the US, vehicles drive on the right side of the road
- **Yield to cross traffic** – Small roads tend to yield to large roads
- **Yield to new lane traffic** – Traffic changing lanes or moving laterally on the roadway yields to traffic in the new lanes
- **Destination positioning** – Cyclist should position themselves approaching intersections with respect to their destination: "Right-turners" on the right; "Left-turners" on the left, near the center line and "straight-through" riders between them
- **Speed destination** – Between intersections, cyclists' should position themselves relative to the speed of the other traffic. Parked vehicles should be at the curb; slower traffic nearer the right side of the road; faster traffic nearer the center line

**Common Cause of Accidents** – The majority of cycling accidents do not involve motorists at all. In other word, bicyclists just fall down. The type of accident is correlated to the age of the bicyclist. Young riders tend to be involved in accidents through their own actions and ignorance oft traffic principles Running stop signs and riding out of driveways without yielding to on coming traffic are two common examples.

Juvenile accidents accounted for the majority of bicycle accidents. When adults were involved in bike/car accidents, the fault tended to lie with the motorist. Motorist turning in front of the cyclist is a common example.

The most feared bike/car accident is being hit by overtaking traffic. This type of accident was shown to account for less than 10 % of all bike/car accidents. Many cyclists will in fact ride very far to the right and by doing so end up encouraging the most common type of accident, the turning/crossing accident. For an example, if a cyclist rides against a curb, and pulls out into the flow of traffic just before parked cars, he or she is more likely to have an accident because the motorist will not be looking against the curb for moving traffic.

The drunken or drugged driver is a threat to everyone on or near a highway. Although the cyclist should always ride defensively, it is difficult to detect these erratic drivers. This is another great reason to always wear a helmet!

Lack of visibility is common cause of accidents. During daylight hours this is not usually a problem. Wearing of bright colors and correct positioning in traffic allows the cyclist to be seen. During dawn, dusk and at night, however, the cyclist is especially at risk. Accidents while overtaking a cyclist or cutting off a cyclist is also more likely during this time of the day due to the visibility. Cyclist who ride in low light should consider in investing some reflective clothing, do not depend on stationary bike reflectors. A flashing beacon type light offers the most conspicuous light viewed from the rear. The only effective way to ride at night is for the cyclist to use very powerful lights. Every state requires cyclists to use a headlight at night.

**Riding with other Cyclists** – Whether there are two or twenty cyclists riding together, their thinking must change. They have become a group and are now responsible for each other's safety. Group riding is one of the cornerstones of cycling and can be enjoyed by all who cycle. The key to behaving as a group, and to surviving, is communication between riders. If one group member suddenly acts like a lone rider, it may disrupt the rhythm of a group. When a group is riding among motor traffic, it is important the group be cohesive and operates smoothly.

**Pace Lines and Echelons** – A pace line or straight – line echelon is a multiple of cyclists riding in a straight line. An echelon is when the cyclists are angled either left or right based on the direction of a crosswind.

### **Group Riding Rules**

- Riders should maintain a smooth pedaling cadence of approximately 90 rpm. This allows for subtle changes in speed, both acceleration and deceleration
- When in traffic, riders should ride with their hands on the brake hoods, but not with their fingers on the brake levers. *Riders with aero bars should not use them in the group.*
- Riders should be comfortable and confident using their peripheral vision to gauge their distance to the rider in front of them. Do not stare at the rear wheel directly in front of you; you must look beyond the rider you are following.
- When in front of group keep a steady pace and do not accelerate. The use of a speedometer and cadence monitor is helpful in maintaining a constant pace.
- Be ready for an accordion effect on the group while climbing and descending hills. If a rider gets out of the saddle his or her bike will actually move

backwards for a split second. This will disrupt the following riders.

- Practice on getting in your toe clips or clipless pedals as quick as possible.
- Track stands should not be allowed at stoplights, all riders should put one foot on the ground.

***Special responsibilities are placed on the lead riders of the group where they must see and think for the entire group***

- The lead rider must never coast. This will help minimize the use of brakes by drafting riders
- The lead rider must keep a constant lookout for road-surface hazards, such as potholes, railroad tracks, glass, debris etc... The lead rider should call out and point to the hazard.
- The lead rider must be attentive to potential traffic conflicts, such as driveways, intersections and merging traffic.
- The lead rider should call out well ahead of stop signs "Stopping!" The group slows and stops together. The group should cross the intersection when traffic allows.
- The lead rider is responsible for announcing and deciding how turns are to be made. For right turns, announce well in advance and signal using the pointing method. If the corner is tight or a hazard is present, the command "Slowing!" is passed back. For left turns it is important to anticipate well in advance checking for over taking traffic. If the traffic is heavy, the leader should announce "Slowing!" as the group waits to slip through a gap in the traffic. If there is a left turn lane, the group should use it, taking up the entire lane.

# Skills and Techniques

## Mounting the Bicycle Safely

- Straddle the bike, standing over the top tube and place both hands on the brake hoods
- Engage one foot in pedal, either clipped in or toe strap secure
- Place engaged foot just forward of top dead center
- Push forward with foot that is on the ground while pushing down with foot on the pedals. Raise yourself up and sit on the saddle
- As soon as speed is adequate engage the other foot to the pedal

## Dismounting Safely

- Begin slowing by using both brakes
- At a walking speed one pedal is placed at the bottom of its arc, and the cyclist weight is transferred to that pedal
- Make sure toe straps are loosened
- The cyclist slides forward and lifts off the saddle, disengaging the pedal at the top of the stroke.
- The unclipped foot is placed on the ground as the cyclist stops. Take precaution not to skid a foot while stopping, this will wear out cleats.

## Riding Straight and Steady

- Cyclist should ride with both hands on the brakes or slightly behind the hoods. Keeping fingers off the brake levers
- Allow several bike lengths between riders until the cyclist is comfortable
- The cyclist should look ahead (approx 40 feet) not down at the wheels. Arms and upper body should be relaxed, a tense and rigid body will not allow smooth steering



## **Looking Back While Riding**

- Move both hands to the tops of the bars
- Release the hand on the side that you will be looking over your shoulder and place hand on top of that leg towards hip.
- Turn your head and look over shoulder while steering the bicycle straight
- In some situations it is possible to look under one armpit to see whether anyone is directly to one's side

## **Signaling to Motorists**

- A cyclist planning to turn must look behind and ahead to check traffic flow
- After checking traffic, the cyclist should signal their intended action. The faster the speed the earlier the need to signal.
- The basic hand signals for turning are an extended straight out arm pointing in the direction of the turn. The right turn is signal by the right arm.
- When the turn is initiated, return both hands to the handlebars

## **Control of Speed**

- The cyclist must match the speed of the group, which requires subtle control. A new cyclist is used to quickly accelerating and braking as necessary. This type of riding will cause accident of near crashes if practiced in a group
- Speed control can range from easing up on the pedals for a moment to lightly applying both brakes at the same time.
- Hands can either be on top of the hoods or in the drops
- Effective light braking will come with practice.

## **Shifting Gears**

- Each brand and model of gear systems have their own actions. Some require more pressure or longer lever throws. This is a skill that is learned by repetition and practice.
- When approaching stops, down shifting to a lower gear will help facilitate a quicker acceleration.
- Selecting a lower gear on a climb will allow the cyclist to remain seated and pedal a higher cadence

## **Sudden Stopping**

- Sudden stopping is typically done in emergency situations, for instance when a car pulls out in front of a cyclist and there is no place to swerve.
- Stopping or slowing quickly requires the use of both brakes, but mainly the front brake which has approximately 3 times the stopping power of the rear brake
- The correct foot position is leading foot at 4 o'clock and rear foot at 10 o'clock
- Hands should be in the drops and arms braced. Riders should slide back on the saddle and be looking ahead
- Brakes should be applied simultaneously, with slightly more pressure given to the front brake

## **Drinking on Bike**

- The cyclist should practice getting the water bottles out of the cages using either hand.
- If needed, quickly glance down to retrieve or replace bottle
- Never take both hands off the bars while in the group, if both of the hands are needed go to the back of the group
- Schedule drinking while at the back of a group or paceline.

## Cornering Safely

- Proper body position seated with hands in the drops or on the hoods and relaxed arms.
- Control your speed with light brake action to safely negotiate turn.
- Inside pedal should be at 12 o'clock, with weight applied to outside pedal
- Lean into the corner, do not steer the bike
- Drop inside shoulder slightly and if necessary slide forward on the saddle transferring more weight to stabilize the front end
- The layout of the corner and speed of the cyclist will determine how much the cyclist should lean into the corner
- Once past the apex, the rider should bring the bicycle back to the vertical position and resume pedaling
- Cornering in a group, the cyclist must maintain their line and trust the other cyclist to hold their line
- In slick conditions the cyclist should control speed entering the corner with rear brake applied continue pedaling through the corner, bring the upper body towards apex of turn, keeping bike upright to prevent clipping a pedal.

## Paceline Skills

### Types of Pacelines:

**Single** – Two or more riders riding wheel to wheel

**Double** – Two riders abreast with riders wheel to wheel behind each rider

**Echelon** -Diagonal paceline in a cross wind where riders wheels are almost overlapping

**Rotating** – Dynamic paceline or Echelon that riders are constantly rotating off the front

## **Rules and Etiquette of Pacelines**

- The front rider is the leader - call out hazards, up coming traffic and signal for stopping, turning and slowing.
- Group members share information either verbally or with hand signals
- Last rider communicate cars or riders passing (car back, group passing)
- Pull off into the wind (lead rider)
- Stay close to the group as you drop back and pull in after the last rider
- Pull through even if it is a short pull
- Do not take the pull from a weaker rider on the uphill; he will not get the benefit of the draft.
- Never overlap wheels (except in echelons and then communicate with the rider you are on the left or right)
- Focus several rider ahead of you in the pace line so you can plan your actions
- No surging – as you take the lead position maintain the same speed until the lead rider has rejoined the pace-line and recovered.
- Double pace-lines – pull off to each side – unless you are in a rotating pace-line
- Avoid riding in the "gutter"
- Avoid allowing gaps to form
- Signals to use when pulling off - flick your fingers or elbow on the side you wish the rider to pass.
- Avoid taking your hands off the handlebars - if you signal with arm movement you will most likely swerve.

Sources: USA Cycling Club Coaches Manual; 2003  
Northwest Cycling Club's Skills Clinic; 2003  
Project Racer.com, Carl Jones - Road Cycling Skills  
Clinic; 2005