

Smart Cycling session 1: your bike



Tracey Austin
Jesse Peers
Scott Wagner



Why Bike

"There is no machine known that is more efficient than a human on a bicycle. A bowl of oatmeal, 30 miles, you can't come close to that..." -Bill Nye

"Assisted walking" = 4x faster/farther with same effort



Not Just for Sport!

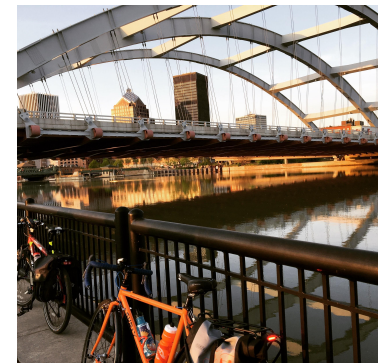


Why Bike

Half of our car trips are under 3 miles;
Often faster than a car over short distances

Allows for more spontaneity

Get to know your city more



Financial Benefits

AAA (2017): Average cost of owning/operating a car: \$8,469 per year

Ever feel like you're "driving to work to make money to pay for your car to drive to work?"

Transportation spending can go from over 30% of household budget to less than 10% if car ownership can be reduced

According to GM, cars are parked - not in use - 95% of the time

Health Benefits of Active Mobility

Cycling can have a miraculous effect on your health

WHO recommends a half hour of exercise a day, 5 days a week

~200,000 Americans die every year from conditions linked to lack of physical activity

2017 UK study found bike commuters had a 46% lower risk of developing heart disease and a 45% lower risk of developing cancer

You get more life in years & you're more likely to remain mobile & independent into older age "Cyclists had muscles & immune systems that looked 30 years younger..."

Sustainability

Reduce your carbon footprint

If 14% of all urban trips worldwide were taken on bikes, we'd reduce enough emissions to achieve the Paris climate goals



Life without electric cars



Life with electric cars



Ice Breaker

What cycling benefit appeals to you the most?

How'd you hear about the course?

Why'd you sign up for it?



Choosing a Bike

Considerations:

How much to spend

What kind of riding

Where you will be riding

New, basic, no-frills bike: \$300



Road Bike

Road/Pavement

Drop bars

Narrow tires

Light / aerodynamic

Built for speed



Mountain Bike

Unpaved trails

Heavy duty tires - traction

Wide gear range

Flat bars

Upright



Hybrid/Commuter/Comfort Bike

Blend of the two

General-purpose / workhorse

Comfortable, upright position

Narrower tires

Paved/unpaved roads



Other Styles

Recumbent

Tandem

Folding

Cargo

Fat Bikes



E-Bikes / Pedal assist technology



Bike Fit

Stand over top tube

1-2" clearance road bike

2-3" clearance hybrid

3-4" clearance mountain bike

Saddle level

Handlebars as wide as shoulders

Seat tube length must match body proportions



Saddle

Adults *should not* be able to remain on saddle & have both feet touch ground

Slight bend in knee when leg is at bottom of pedal stroke

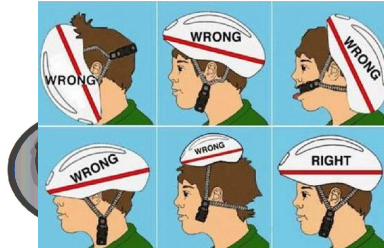
Large, cushy saddles aren't comfortable on long rides

It shouldn't hurt! Experiment with seats.



Helmet

Highly recommended for everyone
Required for kids under the age of 14



Helmets

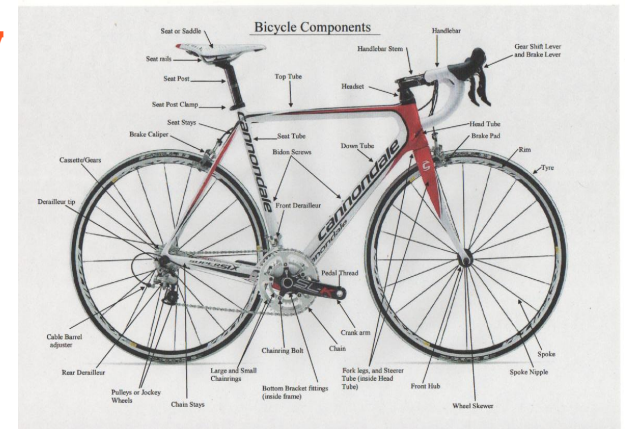


Safe Clothing

Visibility: contrast, bright
Be conspicuous
Reflective tape on moving parts
Close toed
Don't get caught!



Anatomy Class



ABC Quick Check

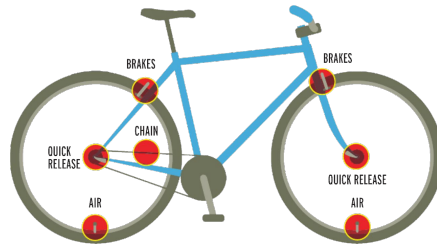
A- Air Pressure and Tires

B- Brakes

C- Cranks, Chain, Cassette

Quick- Check the quick releases

Check- An overall bike safety check



Smart Cycling session 2: traffic safety



Tracey Austin
Jesse Peers
Scott Wagner



Safer than you think

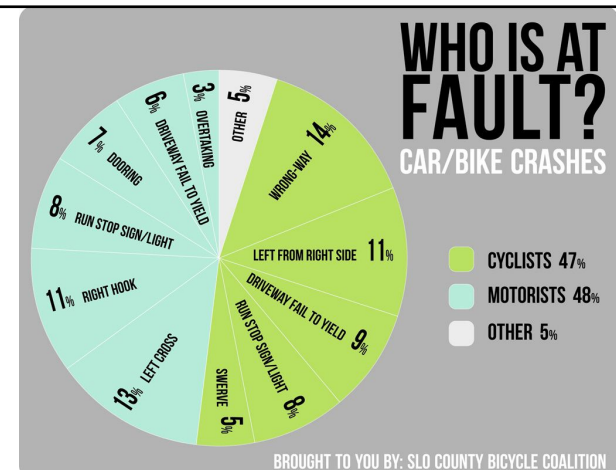
83% of bicycle crashes don't involve cars

More than half of all bicycle/car crashes involve children cyclists

Falls due to loss of control, flats, mechanical failure, etc.
constitute 50% of bike crashes

Cyclists: safety in numbers

Crash rates decrease with rider experience & opportunities to
ride in adverse conditions



Our Roads

Roads are public spaces (the “Commons”), a shared resource

All people have an equal right to use the highways for travel & transportation by “proper means”

Don't interfere with others' right to use the roadway (thoroughfares for travel)

Users must obey the rules set for the safety of others



Our Roads

Laws apply to *all* users

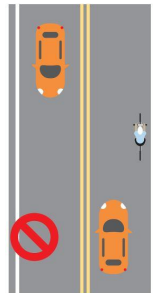
sary delay. Each citizen has the absolute right to choose for himself the mode of conveyance he desires, whether it be by wagon or carriage, by horse, motor or electric car, or by bicycle, or astride of a horse, subject to the sole condition that he will observe all those requirements that are known as the “law of the road.” This right of the people

Drive on the Right-hand Side of the Roadway

The basis for all other traffic laws!

Going with traffic is safer & more predictable to other users

You must see traffic signs & signals

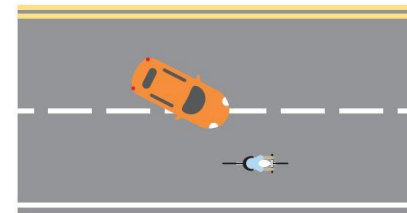


First Come, First Served

Each vehicle is entitled to their space (with reasonable clearance all around)

Reasonable stopping distance

Other vehicles wanting their space must yield to vehicle now using it

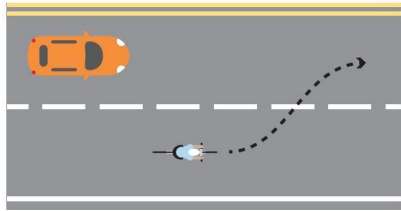


Yielding When Changing Lanes

If you want to change lines, yield to traffic in new lines of travel

You must look first and ensure the lane is clear

Behind & Ahead

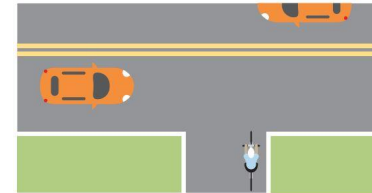


Yielding to Crossing Traffic

Vehicles on less important roads yield to traffic on more important roads

Includes driveways, alleys & parking lot entrances/exits

Proceed on the important road only when it is safe



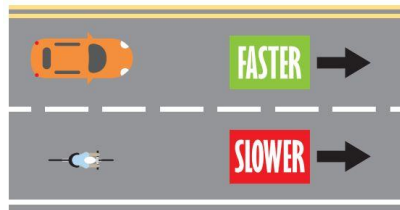
Speed Positioning

Parked vehicles at curb

Slowest vehicles generally furthest to the right

Fastest vehicles near the centerline

Only pass other vehicles on the left



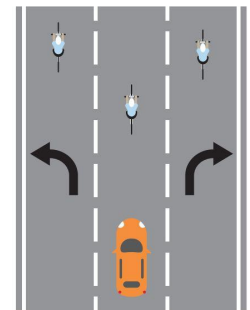
Intersection Positioning

Approach intersections in the proper position

Right turners next to curb

Left turners near the centerline

Straight-through vehicles between these 2 positions



Signs & Signals

Follow all street signs, signals & markings



Bicycles

US Uniform Vehicle Code:

Bicycles, as legitimate vehicles, have a right to the road - therefore:

Traffic laws pertain to bicycles. We must obey traffic control devices too.

“Vehicular Cycling” = act as any other vehicle on roadway

Cyclists fare best when they act and are treated as drivers of vehicles

Uniqueness of Bicycles

We shouldn't claim our rights without living up to our responsibilities

More awareness required; be prepared to take evasive action

Cyclists are allowed to operate on shoulder & ride two abreast except when they're being passed by other vehicles

Cyclists are required to keep to the right except under special circumstances

NYS Law



Scanning

Scan *frequently*

brief head turn

tuck chin into shoulder

take hand off handlebar to turn upper body

Helps communicate your intentions

Make eye contact with drivers

Scan, signal, scan again, turn

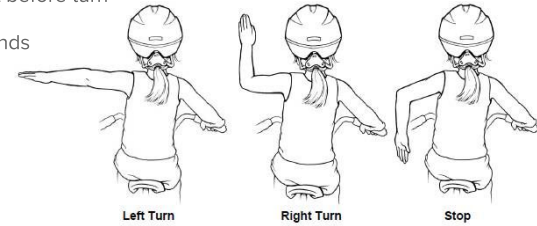


Signaling

Make your intentions clear

Required 100 feet before turn

Hold for 2-3 seconds



Riding on Sidewalks

Generally unsafe; sometimes illegal

Not visible

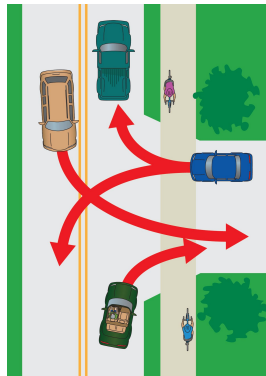
Frequent crashes

If you decide to ride on SW:

Go slow

Yield to pedestrians

Look at each driveway & intersection



Lane Position

You have a right to the road

Law: Ride as far to the right as is practicable

Where possible, keep far enough to right to enable faster drivers to overtake

When too narrow to share, control the lane by riding in the center. This is legal in NYS.

Move left to discourage unsafe passing



Lane Position

Ride 3' to the right of motorized traffic when lane is wide enough to share (approx. 14')

Ideally 3' feet of clear space on either side of you

Don't get doored; give yourself 3' when passing parked cars

If traveling the same speed of traffic, take the lane

If traveling faster, pass on the left unless in a bike lane.



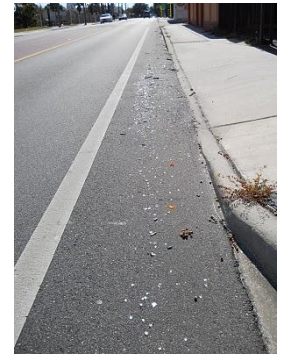
Lane Position

Ride in a straight, predictable line

Don't ride between parked cars

However, if there's a long stretch of shoulder with no parked cars, ride in the shoulder to allow faster traffic to pass

Stay away from debris field, curb & parked cars



Changing Lanes

Plan ahead

Scan, perhaps several times

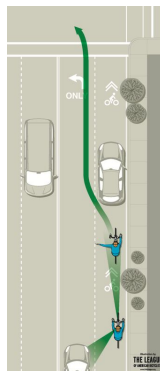
Signal your intention

Yield to traffic already in lane

Scan again

Move carefully, smoothly & deliberately

Repeat for multiple lanes



Intersection Positioning

Predictability is key

Maximize visibility. Avoid blind spots.

As a general rule, you want to be in the rightmost lane that is traveling in the direction you are going

Become a pedestrian if you are uncomfortable

Where you are within the lane depends on the intersection

Do not squeeze your way up to the front of the intersection at a red light

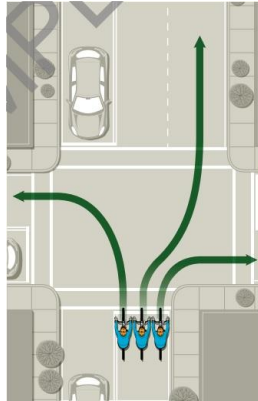
No special turn lanes

Right Turn

Position is on right side of lane

Left Turn

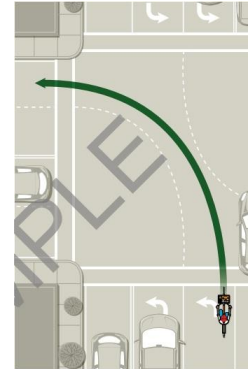
Position is just right of center line



Turn-only lanes

Maneuver when safe

Position yourself in rightmost turn-only lane



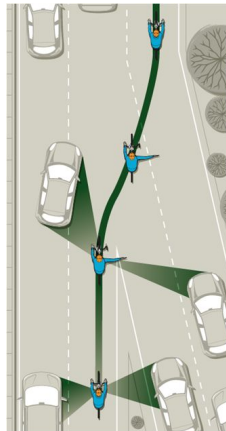
Ramps, Merging & Splitting

Be assertive

Pay attention to traffic coming from behind and from both sides

Be visible & predictable

Same rules as changing lanes



Tripping Loop Detectors

Slowly make lazy S's in the right wheel track of the lane as you approach the intersection

Make sure a car coming behind can pull far enough forward to trip the signal

Wait one traffic cycle or 2-3 minutes then proceed when it is safe to do so

Report signals that don't detect bicycles to local municipality

Bike infrastructure



Bike lanes disappearing



Smart Cycling session 3: better cycling



Tracey Austin
Jesse Peers
Scott Wagner



Braking

Anticipate your stop

Apply both brakes gradually & equally

In an emergency, front brake is stronger

In case of skid, slide back & put weight over rear wheel



Pedaling

Cadence (pedaling rate) – 70 to 90 rpm (fast!)

Easier on your legs: fast cadence, low pedal pressure

Use gears frequently to maintain steady cadence

Higher gear = Harder & more distance traveled for each rotation.

Lower gear = Easier & less distance traveled for each rotation.

Smooth Shifting

Gears get harder the further the chain moves away from the bike

Chains are most efficient when straight

Middle gears for flat ground

Upshift when it's getting easy to pedal; to take advantage of momentum & gravity

Gentle pedal pressure when shifting gears

Keep pedals moving - but with reduced pressure

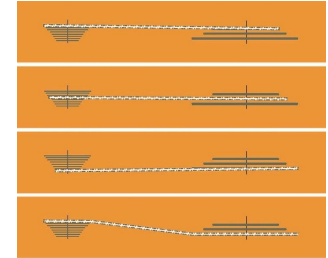


Illustration by
THE LEAGUE
OF AMERICAN BICYCLISTS
www.21stleague.org

“Clipless” Pedals / Toe Clips

Ironically, pedals you clip cycling shoes into

Requires special shoes

Strap attachment goes around foot

Doesn't require special shoes

More efficient

Will go 1-2 mph faster

Using more muscles; you'll be sore at first

Perhaps not the best idea for a commute with a lot of traffic lights



Hills

Downshift to an easier gear as you approach hill (don't wait too late; anticipate it)

Use the smallest chainring up front for climbing

Remember: Gears allow you to exert the same amount of energy at the same cadence over all terrain

Using gears properly, you'll exert no more energy climbing a steep hill as you would on flat ground

This means you'll ascend hills slower - and that's okay

Stretches

Pre-Ride Dynamic Stretches:

Leg Swings, Cat/Cow, Heel/Toe Walk, Chest Stretch, Runner's Lunge, Side Lunge, and Squat and Reach

Post-Ride Static Stretches:

Quad and Hamstring Stretches, Calf Stretch, Hip and Glute Stretches, Neck and Shoulder Stretches, Side Bends

Nutrition / Fuel

Fuel your engine!

Carbs and Protein

Keep a smart snack in your bag

Fatigue hits muscles quickly

Be sure to refuel

Pre Workout Snacks

- Dried fruits
- Fresh Fruits
- Oatmeal
- Quinoa
- Rice Cakes with Nut Butter
- Banana with Almond Butter
- Smoothie
- Whole grain cereal with a cup of almond milk
- Granola or fruit & nut bar such as KIND or Larabar

Post Workout Snacks

- Chocolate Milk
- Boiled Eggs
- Protein Shakes
- Protein Bars
- Cottage Cheese with Berries
- Greek Yogurt with Berries
- Peanut Butter on Wheat Toast
- Hummus with Baby Carrots
- Cheese & Whole Grain Crackers
- Nuts

Hydration

Depends on the weather and your ride intensity

Drink water before you ride

And roughly 16oz per hour (more if hot out!)

If more than an hour or hot out try a sports drink or salted water

Drink water even if you don't feel thirsty



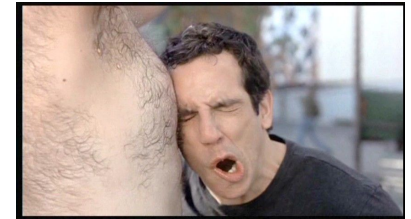
What about sweat?

You might not sweat; depends on length of ride & weather

Wear sweat-wicking layers

Keep a change of clothes at work or bring clothes with you

Toiletries kit / baby wipes / sponge bath



Clothing

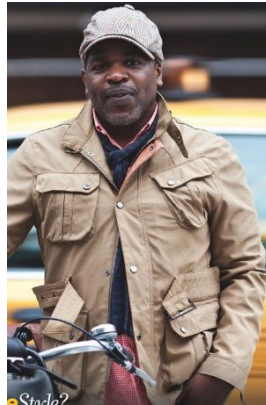
Comfort

Dress for the weather

NO chafing

Everyday clothes

Moisture wicking, gloves, padding



Riding in the Heat

Stay hydrated (sport-style drinks)

Wear sunscreen

Rest stops in the shade

Watch tires and brakes

Reduce air pressure in tires



Viking Biking

Minneapolis, Montreal, Toronto, Chicago =
Substantial cycling modeshare in the Winter

Rochester's Winters: 13 weeks (¼ of year) of
average daily high not reaching 40°F

Quite easy to maintain a good body temperature with layers. Your goal is to be
cool as you ride, not warm.

Ski goggles, "pogies" / Fat Bike or Mountain Bike for better traction

Biggest pain: cleaning off the salt & slush regularly and lubing the bike



Rain

Wet roads are slippery; go easy on curves

Avoid standing water and leaves

Be visible. Lights!

Brake early - water decreases stopping power

Pumping brakes squeegees the rims dry

Fenders!

Wipe the chain down afterwards with a rag &
reapply lube



Rain

Wear waterproof, breathable clothes

You can't stay *completely* dry



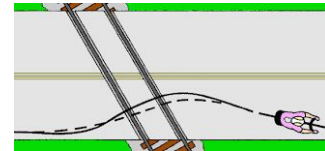
Road hazards

Wind blasts by passing trucks or buses

Give passing trucks room. Slow down. Stiffen up arms & grip on handlebar.

Counteract passing truck forces by adjusting your lean.

Longitudinal cracks, railroad tracks & storm grates



Night Riding

Front white light & rear red light

Keep lights clean

Bright, reflective clothing

Side reflectors

Use caution at intersections

Don't get caught in intersection
as the light turns red

Don't assume you are seen



5 Layers of Safety

Control your bicycle

Follow the law

Lane Position

Crash avoidance maneuvers

Passive safety (gloves, glasses, helmet)



In case of a crash

Carry a form of ID, health insurance card & emergency contact info

Get to a safe place. Don't refuse medical assistance.

Take pics of bike - evidence. Get as much info as possible on car, driver & witnesses

Check your bicycle

When you get home, write down everything you can remember

Consult an attorney

Jawing motorists

"Get off the road!" *"Ride on the sidewalk!"*

If they're yelling at you, they see you

Ignore them

"Cycling gives us multiple opportunities every day to resist the temptation to be a jackass." "It's an urban spiritual discipline." Laura Everett in *Holy Spokes*

File a Police Report if you feel threatened. It gets them into the system & stays on their record.

Cameras

Not as expensive as you think

Gives proof you were following the rules



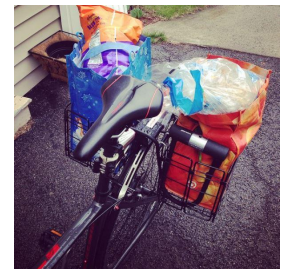
Gear

Tire Lever, Tube, Pump, Patch Kit

Allen wrenches, Chain tool, Screwdriver, Multi-Tool

Rack / panniers

Lock(s)



Locking to racks

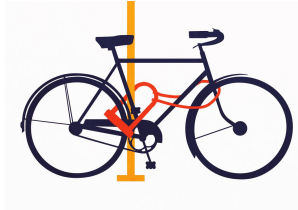
Lock frame & rear wheel to immovable object

Racks in high foot traffic areas preferred

Secure front wheel with cable or 2nd lock

Secure saddle

Take removable accessories with you

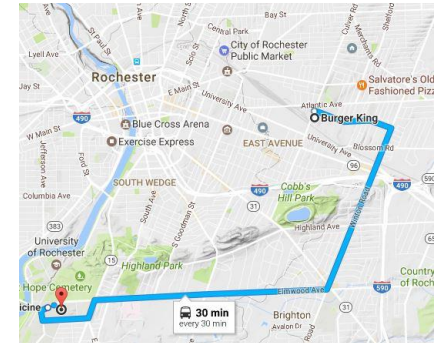


In Conjunction with Transit

No need to bicycle the entire way

RTS bike racks \$1 bus fare

Bike 5 minutes to bus stop >



Multi-Use Paths

Be courteous

Know the rules of the trail you are on

Give a clear signal when passing

Use lights at night

Stay on your side of the trail

Cyclists, the fastest users, yield to slower users (everyone else)



Rural riding

Higher speeds

Curves, hill crests, vegetation

Usually not lit at night

Keep as far to the right as practicable, especially at hill crest & just over

Exception: Move left during right-hand curve so you're visible to motorists rounding the curve behind you



Group Riding

“On your left”

“Hole/bump/etc..”

“Car back”

“Walker/jogger up”

“Slowing/Stopping”

Never shout “Clear!” at an intersection

Stop signs: **every rider stops**; every cyclist responsible for their own safety

Don’t overlap wheels! Steer from the saddle by leaning using your body.

Don’t swerve wildly to miss objects. Point out road hazards.



Smart Cycling session 4: mechanics



Tracey Austin
Jesse Peers
Scott Wagner



Clean that bike!

Wash your bike regularly by gently spraying it with water and scrubbing it with soap or degreaser

Wipe the bike down with a rag and allow to dry

Always lubricate after washing & drying



Chains

Easiest part to maintain yourself

Clean & lubricate it regularly

They stretch over time and will need to be replaced

12 paired links should = 12” from pin center to pin center

Stretched chains destroy your gears



Gears

Good



Bad



Flat Tires

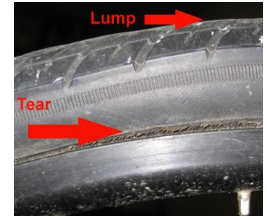
Snake Bite / Pinch



Puncture



Misc./Defects



Necessary Tools

Tire Levers

Patch Kit or Spare Tube

Pump (manual or CO2)

For a wheel with axle nuts, you'll need a proper-sized wrench



Fixing a Flat - Remove Wheel from Bike

Shift to hardest gear (smallest cog)

Release brakes

Open quick release lever & remove wheel from frame



Fixing a Flat - Removing Tube

Use tire levers to bring edge of tire out from one side

Pull tire aside & remove valve stem

Pull rest of tube out

Use your fingers to gently feel the inside of the tire, ensuring nothing is in there that will cause another flat

Visually inspect for debris



Fixing a Flat - Patch the Hole

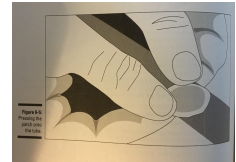
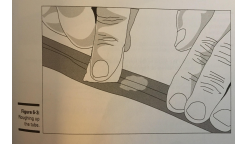
Find hole & mark it

Rough up area around hole

Spread glue thinly and allow to dry

Put on patch & smooth it out

Inflate the tube just a bit



Fixing a Flat - Putting Wheel Back On

Insert valve stem then work your way around, tucking the tube into tire

Get tire back on the rim, starting with the valve stem area

Visually inspect for pinches

Inflate tire to recommended PSI

Lay chain on smallest cog & gently push the bike into place (drop-outs)

Close brake



Other Tire Advice

When the tires are not properly inflated, you have a greater risk of damaging the rims and getting flats.

When riding in the heat, deflate your tires a bit since heat expands air pressure.

Ensure the valve coming out is straight and not angled towards the side.

Every once and a while, get a pair of needle nose pliers and remove pebbles from the tire. Some will eventually work their way in.



Rear Derailleurs

A spring inside is constantly pushing the derailleur away from the bike toward the smallest sprocket.

Sloppy Shifting:

When shifter cable tension makes the spring too tight, it will hesitate shifting outward to higher, more difficult (smaller) cogs/gears

When cable tension is too loose, it'll have difficulty shifting inward to lower, easier (larger) gears



Shifting Adjustments

Shifting adjustments are made with the barrel adjuster

If cable is too tight, tighten the barrel adjuster by turning it clockwise

If more tension is needed, loosen the barrel adjuster by turning it counter-clockwise



Limit Screws

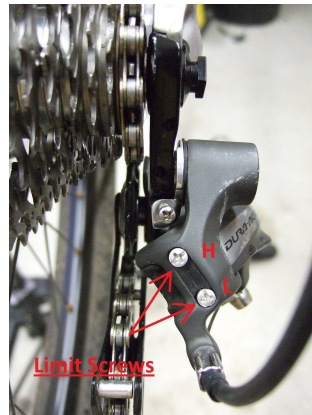
Prevent the chain from falling off and jamming

H-screw sets outward limit (smallest cog)

L-screw sets inward limit (largest cog)

Tightening a limit screw restricts movement

Loosening limit screw allows for more movement



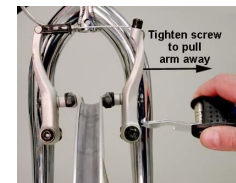
Braking Adjustments

You should have 3/4"-1" (thumb-width gap) between fully-pressed brake lever and handlebar

Brake pads should be within 1-2mm of rim.
Replace if under 1/4"

Unscrewing barrel adjuster moves the pads closer to the rim

Center brakes so pads on each side strike rim simultaneously



Annual Tune-Up

Tune-ups by professionals are necessary, especially for commuters

Bike mechanic costs pale in comparison to auto mechanic costs

Bicycle components are cheap



Learn More

Park Tool School: learn how to tune up your bike (comes with your own toolbox and repair book)

Dream Bikes paid bike workshops

Many shops offer free Saturday clinics

YouTube



Test

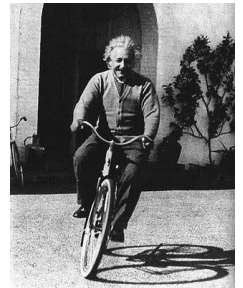
Road Test

Written Exam



Graduation

Become a member, get involved & spread the word



Videos

Instant Turn: <https://www.youtube.com/watch?v=3coR2CYINvI>

MassBike Anita Kurmann: <https://youtu.be/l7zrOg5GdvE>

Cyclist Eye View: <https://www.youtube.com/watch?v=ZFjCza5e1kw>

NYBC videos: <http://www.nybc.net/action/safety/bicycle-law-training-videos/>