

29er Tire Study Overview and Questionnaire

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Introduction

The 29er Tire Study is a small study of the use of a set of currently-available 700c tires on various types of terrain by various unicyclists. A set of eight road and off-road tires are being sent to volunteer unicyclists worldwide sequentially. The unicyclists choose two routes, one off-road and one on-road, ride each of the tires over the routes, then answer questions and record their impressions of each tire's suitability and performance. When the last unicyclists have finished, the results will be presented in a summary paper for the general public's benefit. This paper outlines the study, gives general instructions to the unicyclists, and presents a questionnaire to be used for recording data.

The Tires

There are currently eight tires included in the study, presented in alphabetical order:

1. IRC Mythos II front 700c x 2.1
2. IRC Mythos II rear 700c x 2.1
3. Kenda Klaw XT front 700c x 2.1
4. Kenda Klaw XT rear 700c x 2.1
5. Schwalbe Big Apple 700c x 2.35
6. Schwalbe Marathon XR 700c x 1.75
7. WTB Nanoraptor 700c x 2.1
8. WTB Motoraptor 700c x 2.1

General Procedure

Each unicyclist should perform the same general procedure, in order to gain a certain amount of uniformity to the experimental overhead. This procedure is:

Before receiving the tires:

- Ensure your unicycle is in top operating condition, especially considering wheel trueness and frame alignment. Make sure all connections are snug and that there are no broken parts or stress cracks (especially in the seat base).
- Choose a road route and an off-road route (instructions below) and ride them to ensure familiarity, using your current tire.
- Ensure you have a working pump, accurate gauge, and plastic tire tools.
- Print and read the questionnaire. Please contact me to clarify any questions you may have.

After receiving the tires:

- Unpack all the tires and inspect them for damage and wear. If any of them is unrideable for any reason, please contact me right away for a replacement. Fill out the "Upon opening the box" section of each tire's evaluation sheet (later in this paper).
- Record your unicycle data on the questionnaire. This includes hub, rim type, seat type, etc.
- Save the boxes for shipping the tires out to the next rider.

For each tire:

- * 1 2 3 4 5 6 7 8
- * Install the tire on your unicycle, recording installation notes using the questionnaire. Use any order you prefer.
- * Record the date, time, and weather information on the questionnaire.
- * Record the pre-ride tire condition on the questionnaire.
- * Don your safety equipment, including helmet, for all rides.
- * Ride the road route and record observations.
- * Ride the off-road route and record observations.
- * Bring the questionnaire if you'd like and record as you go, or when you get back, it's up to you.
- * Record the post-ride tire condition on the questionnaire.
- * If it is necessary to do each ride on a separate day, that is fine.

After riding all the tires:

- Try to avoid riding the tires more than the two routes. This helps ensure that the tires get uniform wear so that each rider has generally the same starting point. Please avoid extensive idling on pavement to cut down on focused wear not related to ridability.
- Uninstall the tire and clean it with a brush and water so the next guy won't have a mess.
- Pack the tires and tubes carefully. For the tires without a "foldable" bead, limit the curve to a figure-8.
- Contact me for the name and address of the next rider.
- Ship the tires as inexpensively as possible; insurance is not necessary.
- For international shipments, label the contents as "Used unicycle tires for study and return."
- Send me your filled-out questionnaire.

The routes

Choose two circular routes, each about 5 miles long. The routes should be circular to equalize overall elevation change. You will ride each tire on each route with two different pressures, for a total of 4 routes per tire, 32 rides in all, for a total of 160 miles.

Road Route

The first route is a road route. It should include at least the following features:

- Significant hills and turns
- A section of crowned road
- A section of sidewalk, including some places to hop up to the sidewalk and down.
- Some smooth road and some rough
- Some mild stairs (optional)

Off-road route

The second route is an off-road cross-country route. It should include at least the following features:

- Significant hills and turns
- Some dirt road/fire road double track with a mix of hard-packed dirt and stones
- Some single track with more significant surface interruptions, including roots, rocks, potholes, mud holes, streams, and the like.
- Some places that require a 1-foot drop
- Some places that require hopping uphill in order to proceed without dismounting

Questionnaire

Unicyclist

Please write a brief bio of yourself and your riding experience.

What kind of 29er riding do you do?

Do you ever enter races using a 29er?

If so, please tell us a story about one of those races.

How much do you weigh?

Do you ride mostly on-road or off-road?

Please characterize your riding style by checking the appropriate circles:

General Speed

Very slow

Slow

Moderate

Fast

Very fast

General Approach

Careful

Steady

Twitchy

Reckless

Suicidal

Need at least two other gradable characteristics.

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Unicycle

What kind of components are you riding with?

Seat:

Seat handle:

Frame:

Cranks (type and length):

Pedals:

Rim:

Hub:

Bearings:

Do you have brakes?

What tire do you typically ride?

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The Routes

Road route

Please describe the road route you have chosen and any significant riding features that it contains.

Does the road have a crown? If so, please estimate the difference in height between the top of the crown and where you are typically riding, and the distance between them.

How rough is the road? Are there potholes, cracks, frost heaves, speed bumps, ridges?

Off-road route

Please describe the off-road route you have chosen and any significant riding features that it contains.

Please check all descriptions that apply to the double-track part of your off-road route in general [need more descriptors] during the time you are testing the tires:

- | | | | |
|--|-----------------------------------|--|--|
| <input type="checkbox"/> Loose | <input type="checkbox"/> Stony | <input type="checkbox"/> Sandy | <input type="checkbox"/> Sloped sideways |
| <input type="checkbox"/> Muddy | <input type="checkbox"/> Frozen | <input type="checkbox"/> Icy | <input type="checkbox"/> Snowy |
| <input type="checkbox"/> Eroded | <input type="checkbox"/> Gravelly | <input type="checkbox"/> Smooth | <input type="checkbox"/> Wet |
| <input type="checkbox"/> Drivable by car | | <input type="checkbox"/> Drivable by 4-wheel drive | |
| <input type="checkbox"/> Hilly | <input type="checkbox"/> Steep | <input type="checkbox"/> | |

Please check all descriptions that apply to the single-track part of your off-road route in general [need more descriptors] during the time you are testing the tires:

- | | | | |
|---|-----------------------------------|--|--|
| <input type="checkbox"/> Loose | <input type="checkbox"/> Stony | <input type="checkbox"/> Sandy | <input type="checkbox"/> Sloped sideways |
| <input type="checkbox"/> Muddy | <input type="checkbox"/> Frozen | <input type="checkbox"/> Icy | <input type="checkbox"/> Snowy |
| <input type="checkbox"/> Eroded | <input type="checkbox"/> Gravelly | <input type="checkbox"/> Smooth | <input type="checkbox"/> Wet |
| <input type="checkbox"/> Hilly | <input type="checkbox"/> Steep | <input type="checkbox"/> Windy | <input type="checkbox"/> Rock garden |
| <input type="checkbox"/> Stream crossings | | <input type="checkbox"/> Log crossings | |
| <input type="checkbox"/> Overgrown | <input type="checkbox"/> Marshy | <input type="checkbox"/> Slick | |
| <input type="checkbox"/> Overhanging branches | | | |

Tire Pages

Please duplicate the following pages for each separate tire:

Tire #:

Tire Name:

Upon opening the box

Please **inspect the tire** for damage. If the tire is unrideable, please contact me and I will replace it; then return it to me so that I can write it up for the summary.

What is the general condition of the tire?

Are there any worn patches?

Which is worn more, the center of the tire or the edge?

Are any lugs broken or sheared-off?

Are any threads visible on the side of the tire?

Are there any cuts visible on the exterior or interior of the tire?

Is the bead visibly cut or damaged?

Installing the tire

Install the tire on the unicycle. Use your hands only if possible, otherwise use plastic tools only.

Was the tire easy to install?

Could you install the tire using only your hands?

Note anything unusual about the mounting procedure here:

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Road Route Pressure 1 (highest)

Inflate the tire to the maximum tire pressure as indicated on the tire sidewall.

Inspect the tire carefully. Ensure the tube is holding air properly.

What is the general condition of the tire?

Are there any worn patches?

Which is worn more, the center of the tire or the edge?

Are any lugs broken or sheared-off?

Are any threads visible on the side of the tire?

Are there any cuts visible on the exterior or interior of the tire?

Is the bead visibly cut or damaged?

Ride the road route.

Please describe your experience with the tire on this route:

Please check all descriptions that apply to the *tire* at this pressure on this route:

- | | | |
|-----------------------------------|---|---|
| <input type="checkbox"/> Squirmy | <input type="checkbox"/> Solid | <input type="checkbox"/> Controllable |
| <input type="checkbox"/> Mushy | <input type="checkbox"/> Smooth | <input type="checkbox"/> Lots of traction |
| <input type="checkbox"/> Bouncy | <input type="checkbox"/> Out of control | <input type="checkbox"/> Sloppy |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Tight | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Grainy | <input type="checkbox"/> Slow | <input type="checkbox"/> Agile |
| <input type="checkbox"/> Sluggish | <input type="checkbox"/> Lively | <input type="checkbox"/> Dull |

Please check all descriptions that apply to *your riding experience* with this tire at this pressure on this route:

- | | | |
|--------------------------------------|------------------------------------|--|
| <input type="checkbox"/> Fun | <input type="checkbox"/> Powerful | <input type="checkbox"/> Anxious |
| <input type="checkbox"/> Relaxing | <input type="checkbox"/> Thrilling | <input type="checkbox"/> Easy |
| <input type="checkbox"/> Loose | <input type="checkbox"/> Focused | <input type="checkbox"/> Weak |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Boring | <input type="checkbox"/> Wasted effort |
| <input type="checkbox"/> Frustrating | <input type="checkbox"/> Scary | <input type="checkbox"/> Distracted |
| <input type="checkbox"/> Efficient | <input type="checkbox"/> Tight | <input type="checkbox"/> Exciting |

How well did the tire turn? Sharp turns? Wide turns?

How well did the tire track on the crowned portion of the road? Were you comfortable or did you have to fight the uni?

Were you able to hop up on the sidewalk ok? Did the hop feel solid and controllable?

How did rolling off the curb feel?

Describe the difference between riding on the smooth and rough parts.

Did you roll down some steps?

If so, how did that feel?

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Road Route Pressure 2 (custom)

Inflate the tire to the tire pressure you think is best for a road route.

What pressure did you choose and why?

Inspect the tire carefully. Ensure the tube is holding air properly.

What is the general condition of the tire?

Are there any worn patches?

Which is worn more, the center of the tire or the edge?

Are any lugs broken or sheared-off?

Are any threads visible on the side of the tire?

Are there any cuts visible on the exterior or interior of the tire?

Is the bead visibly cut or damaged?

Ride the road route.

Please describe your experience with the tire on this route:

Please check all descriptions that apply to the *tire* at this pressure on this route:

- | | | |
|-----------------------------------|---|---|
| <input type="checkbox"/> Squirmy | <input type="checkbox"/> Solid | <input type="checkbox"/> Controllable |
| <input type="checkbox"/> Mushy | <input type="checkbox"/> Smooth | <input type="checkbox"/> Lots of traction |
| <input type="checkbox"/> Bouncy | <input type="checkbox"/> Out of control | <input type="checkbox"/> Sloppy |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Tight | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Grainy | <input type="checkbox"/> Slow | <input type="checkbox"/> Agile |
| <input type="checkbox"/> Sluggish | <input type="checkbox"/> Lively | <input type="checkbox"/> Dull |

Please check all descriptions that apply to *your riding experience* with this tire at this pressure on this route:

- | | | |
|--------------------------------------|------------------------------------|--|
| <input type="checkbox"/> Fun | <input type="checkbox"/> Powerful | <input type="checkbox"/> Anxious |
| <input type="checkbox"/> Relaxing | <input type="checkbox"/> Thrilling | <input type="checkbox"/> Easy |
| <input type="checkbox"/> Loose | <input type="checkbox"/> Focused | <input type="checkbox"/> Weak |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Boring | <input type="checkbox"/> Wasted effort |
| <input type="checkbox"/> Frustrating | <input type="checkbox"/> Scary | <input type="checkbox"/> Distracted |
| <input type="checkbox"/> Efficient | <input type="checkbox"/> Tight | <input type="checkbox"/> Exciting |

How well did the tire turn? Sharp turns? Wide turns?

How well did the tire track on the crowned portion of the road? Were you comfortable or did you have to fight the uni?

Were you able to hop up on the sidewalk ok? Did the hop feel solid and controllable?

How did rolling off the curb feel?

Describe the difference between riding on the smooth and rough parts.

Did you roll down some steps?

If so, how did that feel?

Off-Road Route Pressure 1 (lowest)

Inflate the tire to the minimum tire pressure as indicated on the tire sidewall.

Inspect the tire carefully. Ensure the tube is holding air properly.

What is the general condition of the tire?

Are there any worn patches?

Which is worn more, the center of the tire or the edge?

Are any lugs broken or sheared-off?

Are any threads visible on the side of the tire?

Are there any cuts visible on the exterior or interior of the tire?

Is the bead visibly cut or damaged?

Ride the off-road route.

Please describe your experience with the tire on this route:

Please check all descriptions that apply to the *tire* at this pressure on this route:

- | | | |
|-----------------------------------|---|---|
| <input type="checkbox"/> Squirmy | <input type="checkbox"/> Solid | <input type="checkbox"/> Controllable |
| <input type="checkbox"/> Mushy | <input type="checkbox"/> Smooth | <input type="checkbox"/> Lots of traction |
| <input type="checkbox"/> Bouncy | <input type="checkbox"/> Out of control | <input type="checkbox"/> Sloppy |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Tight | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Grainy | <input type="checkbox"/> Slow | <input type="checkbox"/> Agile |
| <input type="checkbox"/> Sluggish | <input type="checkbox"/> Lively | <input type="checkbox"/> Dull |

Please check all descriptions that apply to *your riding experience* with this tire at this pressure on this route:

- | | | |
|--------------------------------------|------------------------------------|--|
| <input type="checkbox"/> Fun | <input type="checkbox"/> Powerful | <input type="checkbox"/> Anxious |
| <input type="checkbox"/> Relaxing | <input type="checkbox"/> Thrilling | <input type="checkbox"/> Easy |
| <input type="checkbox"/> Loose | <input type="checkbox"/> Focused | <input type="checkbox"/> Weak |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Boring | <input type="checkbox"/> Wasted effort |
| <input type="checkbox"/> Frustrating | <input type="checkbox"/> Scary | <input type="checkbox"/> Distracted |
| <input type="checkbox"/> Efficient | <input type="checkbox"/> Tight | <input type="checkbox"/> Exciting |

How well did the tire turn? Sharp turns? Wide turns?

How well did the tire climb hills?

How well did the tire do on uphill hopping? Did you use forward hopping or side hopping?

How well did the tire descend hills?

How well did the tire handle bumps, rocks, and roots?

How well did the tire handle cross-slopes?

How did the tire handle drops?

Off-Road Route Pressure 2 (custom)

Inflate the tire to the tire pressure you think is best for this off-road route.

What pressure did you choose and why?

Inspect the tire carefully. Ensure the tube is holding air properly.

What is the general condition of the tire?

Are there any worn patches?

Which is worn more, the center of the tire or the edge?

Are any lugs broken or sheared-off?

Are any threads visible on the side of the tire?

Are there any cuts visible on the exterior or interior of the tire?

Is the bead visibly cut or damaged?

Ride the off-road route.

Please describe your experience with the tire on this route:

Please check all descriptions that apply to the *tire* at this pressure on this route:

- | | | |
|-----------------------------------|---|---|
| <input type="checkbox"/> Squirmy | <input type="checkbox"/> Solid | <input type="checkbox"/> Controllable |
| <input type="checkbox"/> Mushy | <input type="checkbox"/> Smooth | <input type="checkbox"/> Lots of traction |
| <input type="checkbox"/> Bouncy | <input type="checkbox"/> Out of control | <input type="checkbox"/> Sloppy |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Tight | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Grainy | <input type="checkbox"/> Slow | <input type="checkbox"/> Agile |
| <input type="checkbox"/> Sluggish | <input type="checkbox"/> Lively | <input type="checkbox"/> Dull |

Please check all descriptions that apply to *your riding experience* with this tire at this pressure on this route:

- | | | |
|--------------------------------------|------------------------------------|--|
| <input type="checkbox"/> Fun | <input type="checkbox"/> Powerful | <input type="checkbox"/> Anxious |
| <input type="checkbox"/> Relaxing | <input type="checkbox"/> Thrilling | <input type="checkbox"/> Easy |
| <input type="checkbox"/> Loose | <input type="checkbox"/> Focused | <input type="checkbox"/> Weak |
| <input type="checkbox"/> Slippery | <input type="checkbox"/> Boring | <input type="checkbox"/> Wasted effort |
| <input type="checkbox"/> Frustrating | <input type="checkbox"/> Scary | <input type="checkbox"/> Distracted |
| <input type="checkbox"/> Efficient | <input type="checkbox"/> Tight | <input type="checkbox"/> Exciting |

How well did the tire turn? Sharp turns? Wide turns?

How well did the tire climb hills?

How well did the tire do on uphill hopping? Did you use forward hopping or side hopping?

How well did the tire descend hills?

How well did the tire handle bumps, rocks, and roots?

How well did the tire handle cross-slopes?

How did the tire handle drops?

Removing the tire

Remove the tire on the unicycle. Use your hands only if possible, otherwise use plastic tools only.

Was the tire easy to remove?

Could you remove the tire using only your hands?

Note anything unusual about the removal process here:

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