

Does Height Affect the Compression Levels  
of Bike Suspension?

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## **Aim**

The aim of the investigation was to determine if drop height impacts the amount of compressed suspension.

## **Hypothesis**

The bigger drop will compress more than the small drop because of the force pushing down on the suspension this will make it compress more.

## **Abstract**

This investigation was undertaken to determine if bike drop height impacts psi air suspension. The hypothesis that height would impact psi level was correct. The results proved that height can impact suspension levels.

## **Introduction**

Suspension makes the ride smoother and more comfortable. Imagine being in a car with no suspension it wouldn't be very comfortable would it? There are three main types of suspension for mountain bikes. There is the basic suspension which is usually not air or spring. There is air suspension which you can pump up. There is also spring suspension which is usually on the rear which you can tune.

The suspension that I have is air suspension and the type is Rockshox deluxe and Rockshox revelation.

During each test, the cadence and speed was similar and consistent each time. To ensure the test is equitable, I rode the bike at a similar speed. The bigger drop required a longer distance on entry to the ramp for safety reasons.

### **Variables**

Cadence and approach to the jump will impact the suspension level. Human error of distance on approach to the jump would also impact the overall psi levels. Ensuring the same rider created less of variable. Some inaccurate measuring could have impacted the results.

### **Materials**

- Bike
- Bicycle Suspension
  - Rear RockShox Deluxe
  - Front RockShox revaluation
- Suitable Bike Riding Area with 2 different drop heights
- Measuring Tape
- Suspension pump
- iPad for photographs

## **Method**

1. A straight track with a suitable drop was created.
2. The drop heights were measured.
3. The suspension gauge was inflated.
4. A helmet and bike that were safe to ride (brakes, tyres inflated etc) was used.
5. The bike was ridden along the track (10metres for the short drop and 15 metres for higher drop).
6. Each drop was repeated a second time.
7. The suspension compression was measured.
8. Results were recorded.
9. A safety plan has been completed with a teacher

## Results

Table 1 - Small Drop (76 cm)

Tyre	Test 1 Compression (cm)	Test 2 Compression (cm)	Average Compression (cm)
Rear (150 Suspension psi)	5	4.4	4.7
Front (125 Suspension psi)	9	8.3	8.65

Graph 1 – Small Drop (76cm)

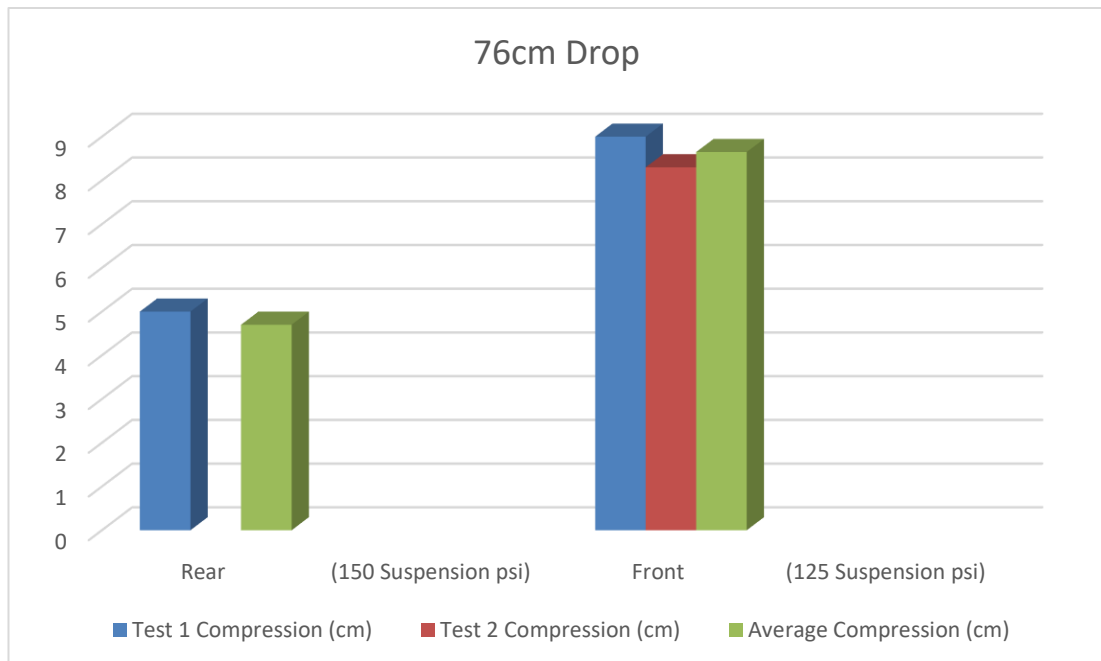
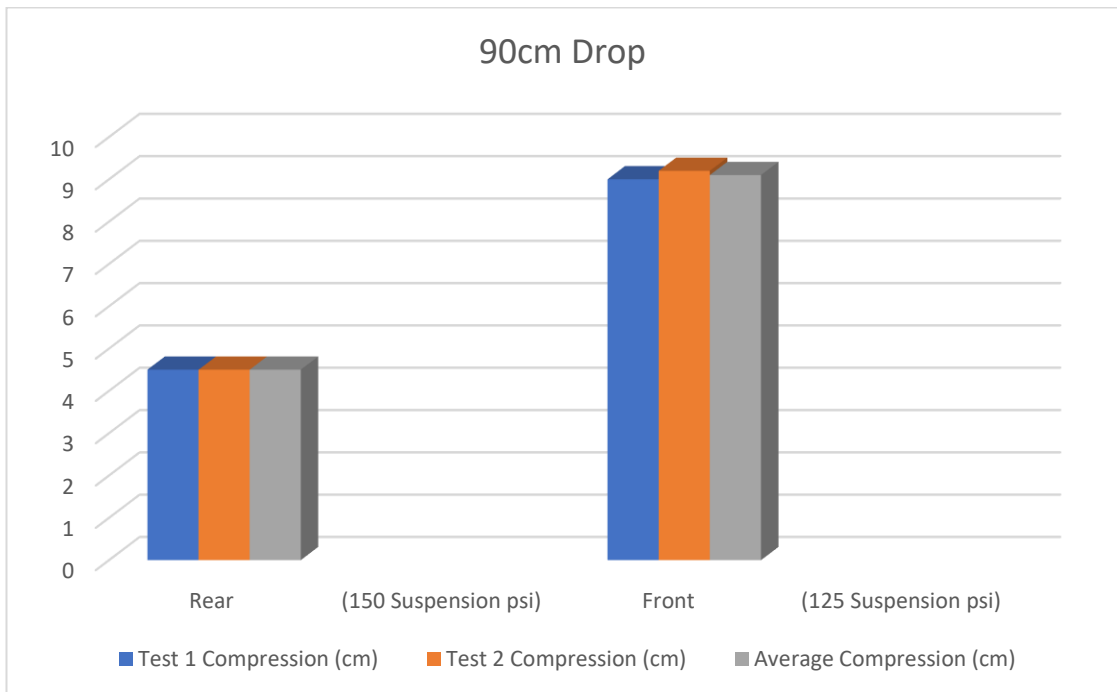


Table 2 – Large Drop (90 cm)

Tyre	Test 1 Compression (cm)	Test 2 Compression (cm)	Average Compression (cm)
Rear (150 Suspension psi)	4.5	4.5	4.5
Front (125 Suspension psi)	9	9.2	9.1

Graph 2 – Large Drop (90 cm)





## Photographic Evidence





## Results

The results show that the higher a drop, the larger compression of suspension is required.



## Discussion

Drops are on a hill. There might be slight miss calculations due to human error and the back suspension leaking.

Next time I would inflate the suspension up to the same amount and I would repeat the tests a few more times than what I have done here.

This applies to the real world in relation to bike psi suspension levels when riding. To improve the results further testing of other bikes or psi equipment could improve the accuracy.



## Conclusion

In conclusion, if I completed this again a third drop height would be more accurate the larger drop made the suspension compresses more than the smaller drop and that my hypothesis is correct.

## Acknowledgements

I would to thank my teacher for assisting with the planning and the report template. I would also like to thank my mum for taking photographs of the investigation.

## References

<https://blog.wahoofitness.com/cycling-cadence-what-is-it-how-to-improve-yours/>

