

# Thunderbolt “Trackside” Classroom

## *Proper Track Braking Technique*

**Mario Andretti:** “Its amazing how many drivers, even at the F1 level, think the brakes are for slowing the car down.”

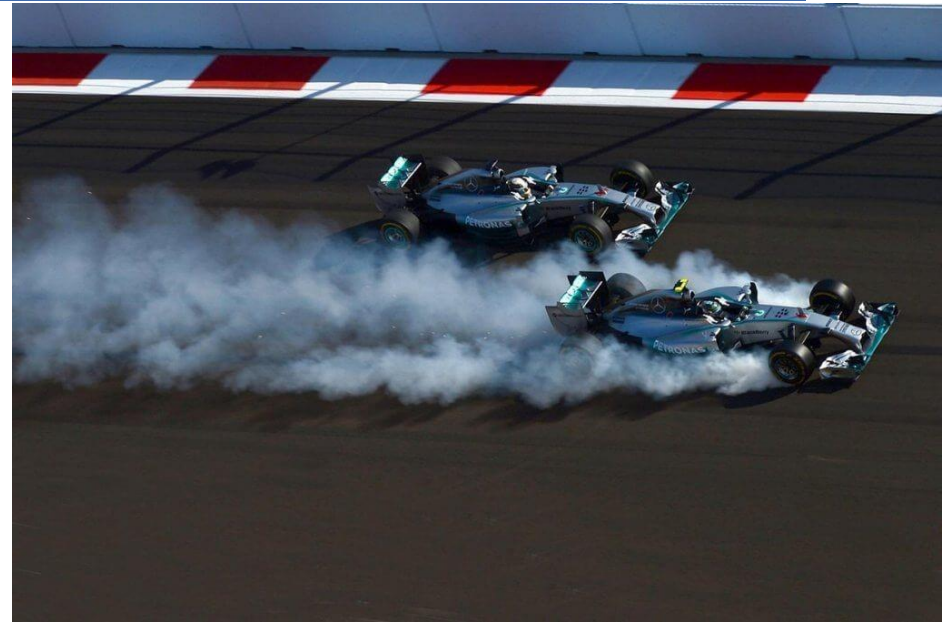


## ***Disclaimer***

*The techniques shown here have been compiled from experienced sources believed to be reliable and to represent the best current opinions on driving on track. But they are advisory only. Driving at speed at Thunderbolt, or any other track, requires skill, judgment and experience. These techniques assume the reader has high performance driving knowledge and applies them as applicable to their level of driving experience.*

*High-performance driving can be very dangerous, carries inherent risks and may result in injury or death. NNJR and PCA make no warranty, guarantee or representations as to the absolute correctness or sufficiency of any representation contained herein. Nor can it be assumed that all acceptable safety measures are contained herein or that other or additional measures may not be required under particular or exceptional conditions or circumstances.*

- The Learning Sequence
- Corner Entry Steps
- Braking/Trail Braking
  - Thunderbolt examples
- Summary



*“High performance driving is all about the correct timing, application of pressure, and release of the brakes.”*

*-- Ross Bentley*

# NNJR “The Learning Sequence”



1. The line
  - i.e. the right one for you and your car
2. “Corner exit car control”
  - Maximize exit speed—and safety
  - “Throttle Application Point”
3. Braking and entering the turn
  - Smooth transition from straight to throttle application point

Carl Lopez: *Going Faster!*





1. Throttle to Brake transition
2. Straight line deceleration
3. Trail Braking (braking while cornering)
  - Most, but not all corners
4. Brake to Throttle transition

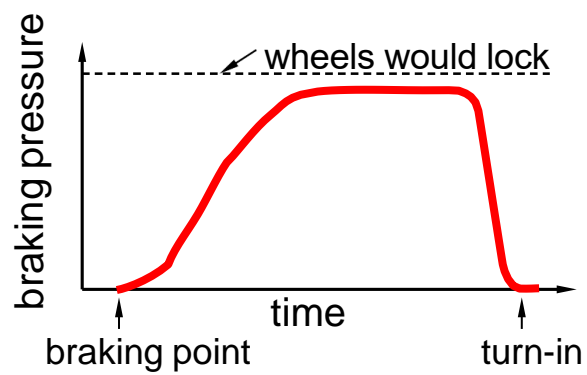
Carl Lopez: *Going Faster!*

*“I spend more time coaching drivers on their brake release than anything else.”*

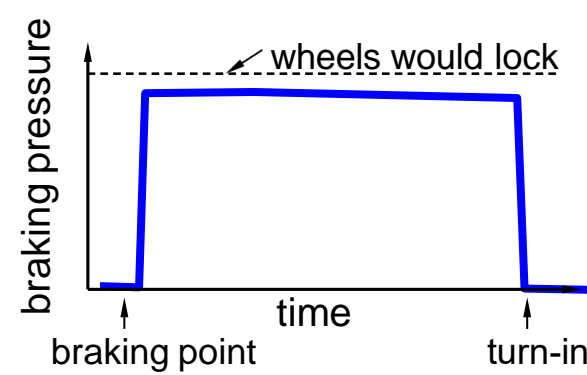
*--Ross Bentley*



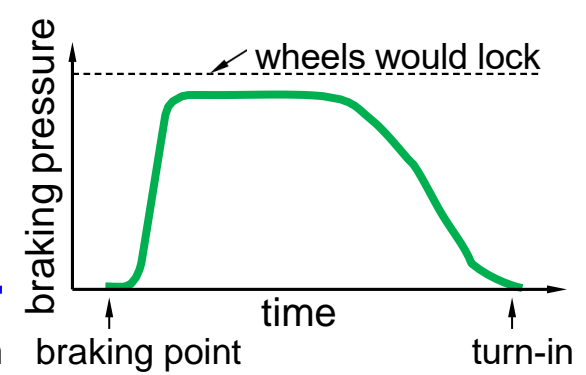
# NNJR Hard Braking Zone



smooth on, quick off



full strength, full time



on hard, then ease off

Slide by Chuck Tucker from community.hagerty.com, used under 



- Proper Seating Position
  - Can't be reaching with right foot!
- Right heel stays on floor
- Pick a consistent braking point (beginning of braking)
  - Be aware of varying approach speeds
- Heel and Toe
  - Learn on the street, not the track



# NNJR Common Braking Mistakes



- Green run group
  - Inconsistent braking point, brake pressure
  - “Jump” on and off the brake pedal
  - Too little pressure early, too much late
- Yellow and Blue run groups
  - Too little pressure early, too much late
  - Jump from heavy brake to heavy gas
  - Trying to “brake late”

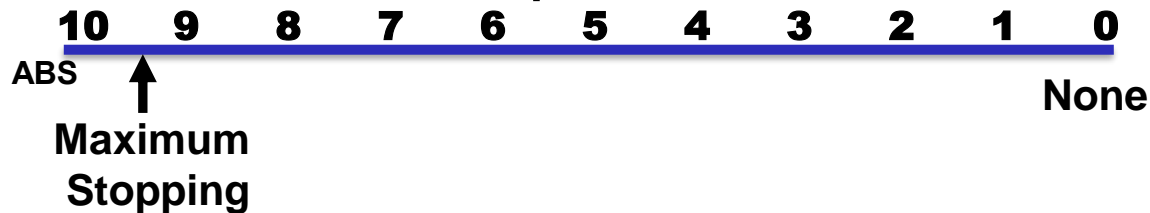




# NNJR How to Improve Braking



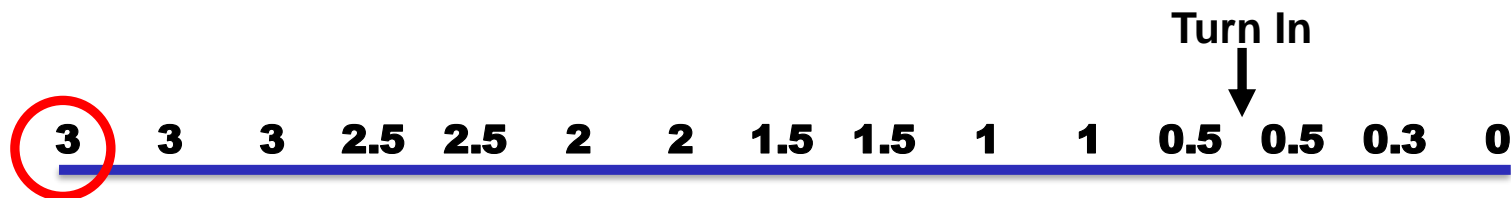
- Focus on brake pressure



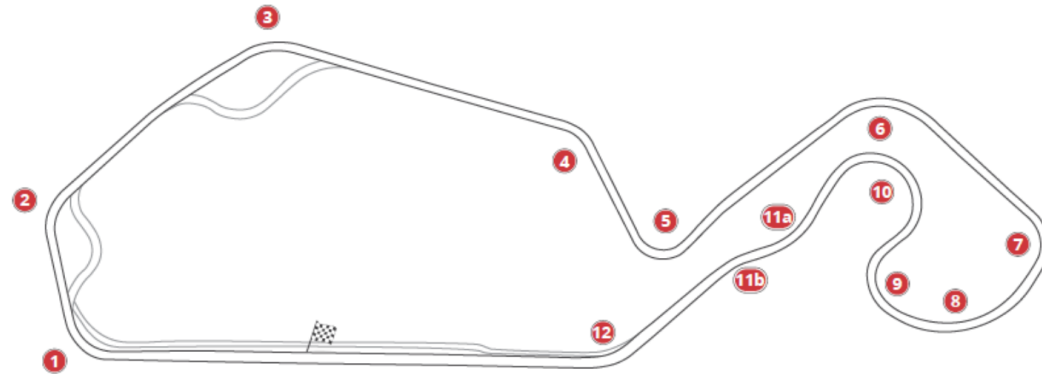
- Hard braking (Turn 1)



- Fast Corners (Turn 4 or Turn 6)



- Mix of corner speeds
- Classic trail braking
  - Turns 5, 9, 10
- Octopus
  - Very slow corners
- Turns 2, 3, 4, 6
  - Fast Corners
  - Very little trail brake (most braking in straight line)
  - May just require gentle or “brush” braking





- Focus on End of Braking (EOB)
  - Much more important than start of braking
    - Always better to brake a few feet earlier and modulate
  - End of Braking is a critical Reference Point
    - Same point, speed (+/- 1-2 mph) each lap
  - First Step: Be aware of brake pressure at Turn In
    - Should be the same each lap





- Learn track braking technique
  - Remember the basics
  - Hard initial brake, gentle release
  - Most braking in first third of brake zone!
- Amount of trail braking
  - Varies by corner (a lot)
  - Varies by car (some)
- Work on smooth transition off brake on to gas
  - Goal: imperceptible



# THUNDERBOLT TURN BY TURN

# NNJR Thunderbolt Passing Zones



Track Information:	
Length:	2.25 miles
Turns:	14 Turns
Track direction:	Clockwise

