The Complete Sim Racing Guide (Fundamentals)

Learn Professional Driving Fundamentals Under 1 Week

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1. Introduction to Sim Racing

1.1. What is Sim Racing?

Sim Racing, short for simulator racing, is the art of driving cars in virtual environments using computer software. Unlike casual racing games, sim racing focuses on realistic physics, car behaviour, and track conditions, making it ideal for learning professional driving techniques safely.

(Example In game photo)

1.2. Why Live For Speed?

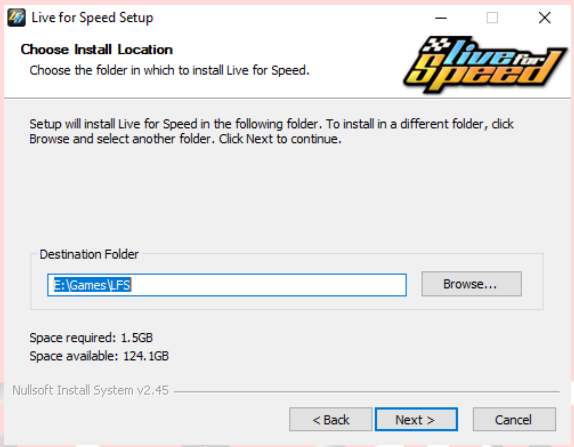
Live for Speed (LFS) is a popular free sim racing simulator that provides highly accurate car physics, customizable tracks, and online multiplayer competitions. It is an ideal choice for beginners with low end systems and aspiring professional drivers alike, as it allows users to practice driving techniques without risking real world accidents.

2. Setting Up Live For Speed

2.1. Installing The Game

Installing Live for Speed (LFS) is simple and straightforward. First, download the official installer from the LFS website (Download LFS).

Run the installer and choose the installation folder where you want the game files to be stored.



Make sure you have at least 2 GB of free space for smooth installation and future updates.

We will be using the Demo version for this guide which is completely free.

Click Finish once the setup is complete.

2.2. Setting Up Controls

Most controls are typically configured by default, whether using a keyboard and mouse, a controller, or a wheel. However, if you experience any issues with the controls or find them uncomfortable, you can adjust them in Options > Controls.

Figure 1

Figure 2

2.3. Choosing a Track and Car

Once controls are set, select the FBM car. We will start with a simple track like Blackwood (BL1). The FBM already has a configured setup for Blackwood in the Demo version so getting the hold of it will be much easier.

2.4. Starting Practice

After configuration, save your settings. Start a practice session in the Singleplayer mode to familiarize yourself with controls, car behaviour, and track layout. Repeat until you feel comfortable before starting the course.

3. Car Components Overview

3.1. Engine

The engine is the heart of the car. It generates the power that propels you forward. In LFS, each car has a unique engine type and power curve, affecting how quickly it accelerates and how much torque it produces at different RPMs.

Learning to keep the engine in its optimal power band helps maintain consistent speed and acceleration.

3.2. Transmission

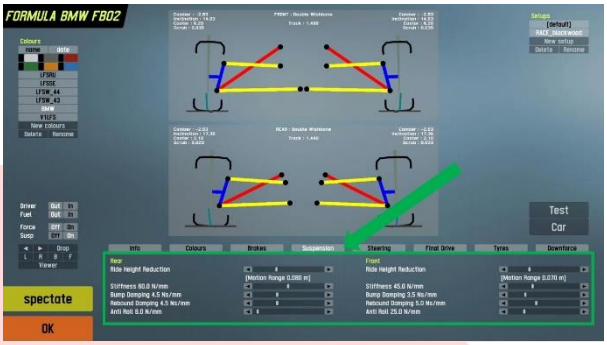
The transmission transfers power from the engine to the drive wheels. Cars in *Live for Speed* may have front wheel drive (FWD), rear wheel drive (RWD), or all wheel drive (AWD) systems.

- FWD cars are easier for beginners but tend to understeer.
- RWD cars are faster through corners but can oversteer if mishandled.
- AWD cars provide balanced control but slightly reduce steering precision.
  Selecting the right drivetrain helps you find your preferred driving style.

  (The FBM is a RWD as you can see in the above picture in 3.1)

3.3. Suspension

Suspension connects the car's body to its wheels, absorbing bumps and maintaining grip. It controls how much weight shifts during acceleration, braking, and cornering.



A soft suspension provides stability but slower response, while a stiffer suspension gives sharper handling at the cost of stability.

3.4. Tyres

Tyres are the only part of the car that touch the road — and therefore, they decide how well your car grips the surface. In Live For Speed, tyre behaviour is affected by temperature, pressure, and surface type (asphalt, grass, gravel).

Cold tyres have less grip and need time to warm up; overheated tyres lose performance.

[Regularly check the 'F9' tyre info menu to monitor tyre temperature and wear.]

3.5. Brakes

Brakes convert kinetic energy into heat to slow your car down. In sim racing, braking is mostly all about controlling weight transfer.

If you brake too hard, the front tyres may lock up, causing understeer. Too little braking, and you'll overshoot corners.

We will practice threshold braking later in this guide, where you press the brake just before tyre lockup, to achieve the shortest stopping distance without losing control.

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4. The Racing Line

4.1. What is the Racing Line?

In simple terms, the racing line is the fastest and most efficient path around a track. It's the line that allows you carry maximum speed through corners by balancing steering, braking, and acceleration smoothly.

A perfect lap is not about how hard you push, but how precisely you follow the racing line.

Tip 1: Think of it as drawing the smoothest possible arc through each turn.

4.2. The Ideal Line

The Ideal Line is the path that provides the best *overall control* and *corner exit speed* for consistent lap times. It's the line you should follow when driving alone or during qualifying laps.

Characteristics:

- Begin on the outside edge of the track before the corner.
- Brake in a straight line before turning in.
- Touch the apex. (the innermost point of the corner)
- Accelerate smoothly while unwinding the steering to exit wide.

Why it works:
This line maximizes the radius of the turn, allowing higher cornering speeds and smoother transitions between braking and throttle.

Best used for:

- Time trials
- Solo practice
- Building muscle memory for each corner

Tip 2: Press "4" in game to bring up the ideal line on the track

4.3. The Defensive Line

The Defensive Line is used to protect your position by limiting the space available for a car behind to overtake. It prioritizes track position over absolute corner speed.

Characteristics:

- Approach the corner closer to the inside of the track.
- Brake slightly earlier to maintain stability.
- Hit an earlier or tighter apex.
- Exit the corner without drifting fully wide.

Why it works:
By occupying the inside line, you remove the most common overtaking path and force the car behind to take a slower or riskier route.

Best used for:

- Race situations
- Final laps
- Narrow tracks or low grip conditions

Tip 3: Use the defensive line only when necessary—overusing it will slow your lap times significantly.

4.4. The Overtaking Line

The Overtaking Line is a modified racing line used to pass another car by prioritizing exit speed or braking advantage. There are mainly two methods of overtaking, namely:

- Switchback Method
- Divebomb Method

[We will discuss only the switchback method as it is beginner friendly and low risk.]

Characteristics:

- Approach the corner from a different angle than the ideal line.
- Brake later or from a wider position when possible.
- Sacrifice apex precision to open up the corner exit.
- Accelerate earlier to gain speed onto the next straight.

Why it works:
A stronger corner exit creates higher straight line speed, making overtakes possible even if the entry is slightly slower.

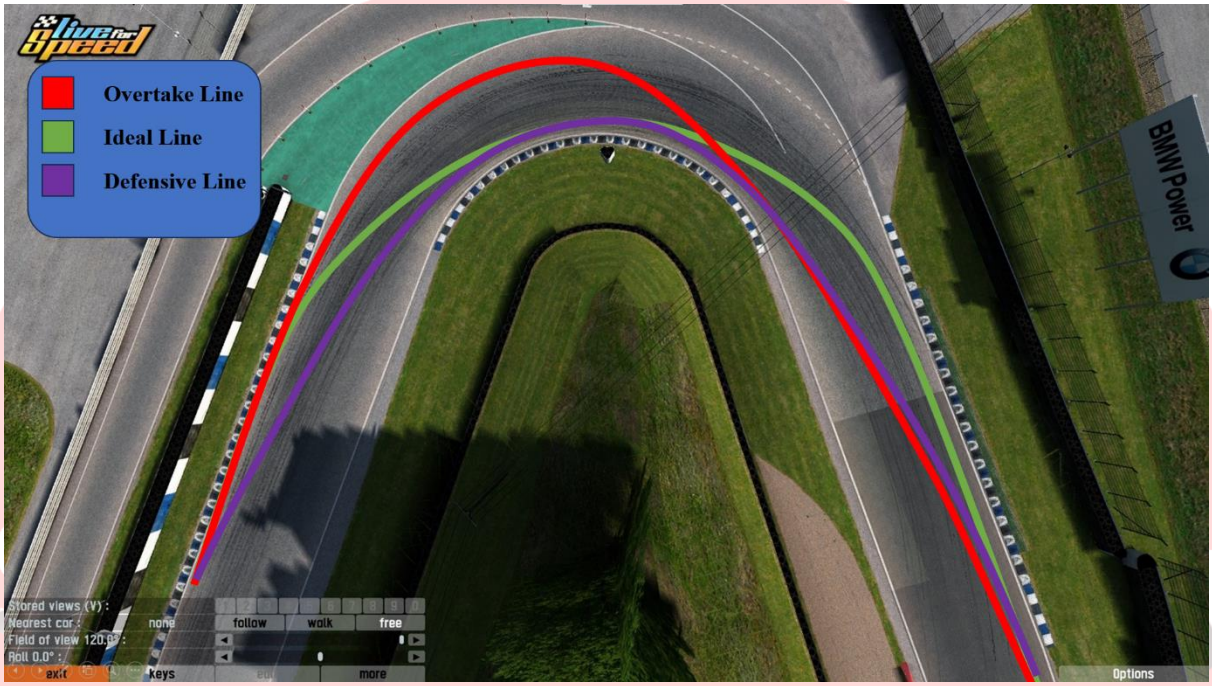
Best used for:

- Passing before long straights
- Out braking opponents into corners
- Capitalizing on opponent mistakes

Tip 4: *Focus on the exit, not the entry—most overtakes are won after the corner, not in it.*

4.5. Ideal vs Overtaking vs Defensive Line

Here is a visual comparison on how these lines differ from each other



5. Brake & Throttle Control

5.1. What is Brake & Throttle Control?

Brake and throttle control is the skill of using the pedals smoothly and precisely to manage grip, balance, and speed. Steering alone does not make a car fast—how you slow down and accelerate does.

A fast lap is not about pressing pedals harder, but about using the right amount at the right time.

Tip 5: Think of the pedals as dimmers, not switches.

5.2. Why Brake & Throttle Control Matters

Every tire has limited grip. Braking, turning, and accelerating all use this same grip. If you demand too much at once, the car loses control.

Good control allows you to:

- Brake later without locking up
- Maintain stability while turning
- Exit corners faster
- Drive consistently lap after lap

Poor control causes:

- Lock ups
- Wheelspin
- Understeer or sudden oversteer
- Unpredictable lap times

5.3. Weight Transfer Explained Simply

Weight transfer is the movement of the car's weight when you use the pedals.

- Braking shifts weight forward
- Acceleration shifts weight rearward

Why this matters:

- Front tires gain grip under braking
- Rear tires gain grip under acceleration

Key Rule:

Smooth inputs allow the tires to use this extra grip. Sudden inputs waste it.

5.4. Braking Technique

5.4.1. Threshold Braking

Threshold braking is applying maximum brake pressure without locking the tires.

Characteristics:

- Strong initial brake pressure
- No tire screeching
- Car remains stable and straight

Why it works:

It extracts the maximum stopping power while keeping control, especially important in LFS where ABS is often absent.

Best used for:

- Corner entry
- Heavy braking zones

Tip 6: If you hear continuous tire noise, you are braking too hard.

5.4.2. Braking Phases

A proper braking zone has three phases:

- Initial Hit – Quick and firm brake application
- Modulation – Gradually reducing pressure as speed drops
- Release – Smoothly easing off before turning

Why it works:
As the car slows down, less braking force is needed. Reducing pressure prevents lock ups and instability.

5.5. Trail Braking (Beginner Friendly)

Trail braking means releasing the brake gradually while turning into the corner.

Purpose:

- Helps the car rotate
- Reduces understeer
- Improves corner entry control

Rules for beginners:

- Brake hard in a straight line first
- Start turning only as brake pressure reduces
- Never maintain heavy braking while turning

Tip 7: If the rear steps out suddenly, your brake release is too aggressive.

5.6. Throttle Control

Throttle control is the ability to apply power progressively without breaking traction.

Correct throttle use:

- Gentle throttle at corner exit
- Gradual increase as steering straightens
- Full throttle only when the car is stable

Incorrect throttle use:

- Flooring the throttle mid corner
- Sudden throttle stabs

Why it matters:

- Wheelspin wastes grip and slows acceleration.

5.7. Corner Exit Priority

The corner exit is more important than the entry.

Characteristics of a good exit:

- Braking completed before the apex
- Throttle applied just after the apex
- Steering gradually unwound while accelerating

Why it works:
A clean exit gives higher speed on the following straight, which directly reduces lap time.

Tip 8: A slower entry with a faster exit is almost always quicker overall.

5.8. Throttle Modulation & Wheelspin

Wheelspin occurs when throttle input exceeds available grip.

Common causes:

- Too much throttle at low speed
- High powered cars
- Exiting tight corners

How to fix it:

- Use partial throttle
- Increase throttle progressively
- Be patient before full throttle

[Smooth acceleration is faster than aggressive acceleration.]

5.9. Brake & Throttle in Different Car Types

Front Wheel Drive (FWD)

Characteristics:

- Stable under braking
- Prone to understeer on throttle

Technique:

- Finish braking early
- Be gentle on throttle at exit

Rear Wheel Drive (RWD)

Characteristics:

- Good rotation
- Sensitive to throttle

Technique:

- Smooth brake release
- Progressive throttle application

All Wheel Drive (AWD)

Characteristics:

- Strong traction
- Can mask bad habits

Technique:

- Still apply smooth inputs
- Avoid relying on traction to fix mistakes

5.10. Practice Exercises

Exercise 1: Braking Consistency

- Choose one braking point
- Brake at the same marker every lap
- Adjust pressure, not distance

Exercise 2: Throttle Patience

- Focus only on clean exits
- Ignore lap time
- Aim for zero wheelspin

Exercise 3: No HUD Driving

- Turn off speed display
- Drive by sound and feel
- Improves pedal sensitivity

5.11. Key Takeaways

- Pedals control grip more than steering
- Smooth inputs are faster and safer
- Exit speed matters more than entry speed
- Consistency beats aggression

[Master brake and throttle control before chasing setups or advanced race craft.]

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6. Car Setup Basics

6.1. What is a Car Setup?

A car setup is the adjustment of mechanical and electronic parameters that control how a car behaves on track. While driving skill determines how fast you can be, the setup determines how easy or difficult it is to drive fast.

- A setup does not make a bad driver fast.
- A good setup simply makes a good driver more consistent.

Rule 1: Fix driving mistakes before touching setups.

6.2. Why Beginners Should Be Careful with Setups

Many beginners lose time by endlessly changing setups instead of improving technique.

Common beginner mistakes:

- Changing multiple values at once
- Copying pro setups without understanding them
- Using setups to hide poor braking or throttle control

Why this is bad:

- You lose reference points
- You don’t learn car behaviour
- Inconsistency increases

Tip 9: If you can’t drive the default setup consistently, a custom setup will make you slower.

6.3. Tyre Pressure

Tyre pressure controls how much of the tyre contacts the road.

Low Pressure:

- More grip
- Slower response
- Overheats faster

High Pressure:

- Less grip
- Sharper response
- Better for long straights

In Live for Speed:

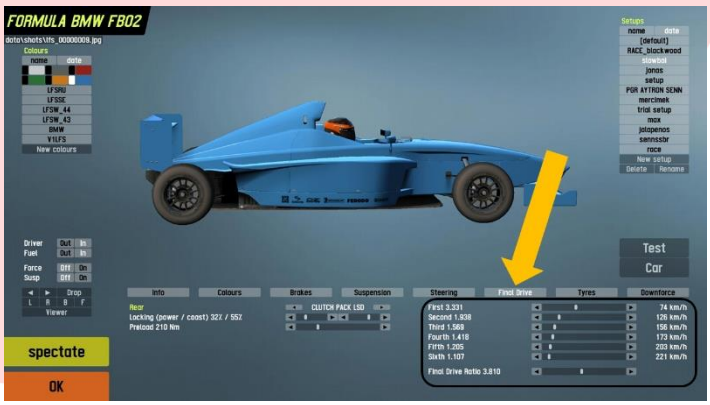
- Tyres should reach optimal temperature after 1–2 laps
- Overheated tyres lose grip rapidly

Tip 10: Use the F9 menu to monitor tyre temperatures. Aim for even temperatures across the tyre.

6.4. Gearing

Gearing determines how power is delivered to the wheels.

Short Gearing:



- Faster acceleration
- Lower top speed
- Better for tight tracks

Long Gearing:

- Slower acceleration
- Higher top speed
- Better for long straights

Beginner Rule:

- Do not custom-tune every gear
- Adjust only final drive if needed

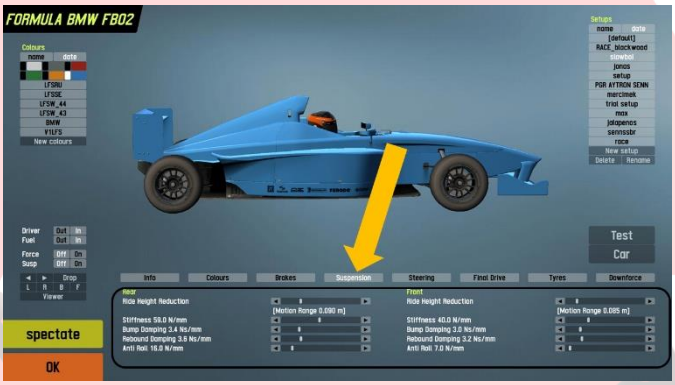
Tip 11: If you hit the limiter too early, lengthen the final gear slightly.

6.5. Suspension Basics (Simplified)

Suspension controls how weight transfers during driving.

Soft Suspension:

- More forgiving
- Better over bumps
- Slower response



Stiff Suspension:

- Faster response
- Better on smooth tracks
- Less forgiving

Beginner Recommendation:

- Stay close to default
- Avoid extreme stiffness

Why:
A softer setup provides warning before losing grip, helping you learn car control.

6.6. Ride Height(In Suspension Menu)

Ride height affects stability and grip.

Lower Ride Height:

- Lower centre of gravity
- Better grip
- Risk of bottoming out

Higher Ride Height:

- More stable over bumps
- Less grip
- Slower cornering

Rule:

- Never go as low as possible
- Stability is more important than theoretical grip

6.7. Brake Bias(Already Explained In Brake And Throttle Control)

Brake bias controls how braking force is distributed.

Front Bias:

- More stability
- Less rotation
- Safer for beginners

Rear Bias:

- Better rotation
- Faster corner entry
- Higher risk of spinning

Beginner Recommendation:

- Keep brake bias slightly forward
- Adjust only if the car refuses to turn under braking

Tip 12: If the rear locks under braking, your brake bias is too far rearward.

6.8. Basic Understanding of Differential (In Final Drive Menu)

The differential controls how power is distributed between drive wheels.

Locked Differential:

- More traction
- Less rotation
- Harder to turn

Open Differential:

- Easier turning
- Less traction
- Can cause inside wheel spin

Beginner Rule:

- Leave differential settings unchanged
- Learn throttle control first

6.9. Setup Change Priority Order

When making changes, follow this order:

1. Driving technique
2. Tyre pressure
3. Brake bias
4. Gearing (final drive only)
5. Suspension (minor changes)

Never change more than one parameter at a time.

6.10. Practice Exercise: Setup Sensitivity

Exercise: One Change Test

- Drive 5 consistent laps
- Change ONE setup value
- Drive 5 more laps
- Compare stability, not lap time

Goal:

- Understand cause-and-effect
- Build mechanical intuition

6.11. Key Takeaways

- Setups do not replace skill
- Default setups are good for learning (Race_Blackwood)
- Stability beats speed for beginners
- Small changes matter
- Consistency is the real performance upgrade

Note:

Master driving fundamentals first.
A clean driver with a default setup will always beat a messy driver with a perfect setup.

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7. Practicing and Improving

7.1. Why Practice Structure Matters

Random laps do not build skill. Improvement in sim racing comes from deliberate, focused practice, not from driving endlessly.

Unstructured practice leads to:

- Inconsistent lap times
- Repeating the same mistakes
- False confidence

Structured practice leads to:

- Faster learning
- Better consistency
- Clear progress tracking

Rule 2: Every practice session must have a purpose.

7.2. Setting Clear Practice Goals

Before entering the track, define one goal only.

Examples of good goals:

- Improve braking consistency into Turn 1
- Eliminate wheelspin on corner exits
- Maintain lap time variation within 0.3 seconds

Bad goals:

- “Drive faster”
- “Beat my best lap”
- “Try new things”

Tip 13: If you can’t explain what you’re practicing, you’re not practicing.

7.3. Warm-Up Laps

The first few laps are not for speed.

Purpose of warm-up:

- Bring tyres to temperature
- Adjust to car balance
- Sync vision, hands, and pedals

Guidelines:

- Drive at 80–90% pace
- Avoid aggressive inputs
- Focus on smoothness

Tip 14: A bad warm-up ruins the entire session.

7.4. Consistency Before Speed

Consistency is the foundation of speed.

Why consistency matters:

- Predictable car behaviour
- Easier error detection
- Faster long-term improvement

Benchmark:

- Aim for **5** consecutive laps within ±0.3 seconds

If you cannot do this:

- You are overdriving
- Your braking points are inconsistent
- Your throttle application is rushed

Rule 3: Consistent slow laps beat inconsistent fast laps.

7.5. Sector-Based Practice

Breaking the track into sectors allows faster improvement.

How to practice sectors:

- Focus on only one section of the track
- Sacrifice lap time to perfect that section
- Repeat until mistakes disappear

Why it works:

- Reduces mental load
- Isolates problem areas
- Builds confidence corner by corner

Tip 15: One improved corner can reduce lap time more than ten average laps.

7.6. Using Replays Effectively

Replays are your best coach.

What to look for:

- Braking points consistency
- Steering smoothness
- Throttle timing
- Line deviations

How to analyse:

- Compare good vs bad laps
- Watch from chase and cockpit view
- Focus on why, not what

Tip 16: If you don't review replays, you repeat mistakes unknowingly.

7.7. Understanding Plateaus

Every driver hits plateaus.

Common causes:

- Overdriving
- Practicing without focus
- Ignoring fundamentals

How to break plateaus:

- Slow down deliberately
- Revisit braking basics
- Remove HUD distractions
- Drive fewer laps with higher intent

Rule 4: Plateaus are solved by refinement, not aggression.

7.8. Tracking Progress

Lap time alone is not progress.

Track:

- Lap time consistency
- Error frequency
- Control under pressure

Recommended method:

- Note average lap time, not best lap
- Record session notes (mental or written)

Tip 17: If your average lap improves, you are improving.

7.9. Practice Frequency

More hours ≠ better results.

Effective practice:

- Short sessions (30–60 minutes)
- High concentration
- Clear goals

Ineffective practice:

- Long sessions while tired
- Chasing lap records
- Driving emotionally

Rule 5: Stop practice when focus drops.

7.10. Practice Exercises

Exercise 1: Consistency Drill

- Drive 10 laps
- Ignore lap time
- Reset if you make a major mistake (spin-out, leaving the track etc)

Exercise 2: Brake Point Lock

- Pick fixed braking markers
- Do not move them
- Adjust pressure only

Exercise 3: Smooth Lap

- No tyre noise
- No wheelspin
- No aggressive steering

Goal: Clean, controlled laps.

7.11. Key Takeaways

- Purpose beats repetition
- Consistency creates speed
- Replays reveal truth
- Plateaus are normal
- Practice quality matters more than quantity

[Practice does not alone make perfect. practice with goal makes perfect.]

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8. Online Racing Etiquette

8.1. Why Online Racing Etiquette Matters

Online sim racing is a shared environment. Every driver's actions affect others. Good etiquette ensures fair competition, clean races, and long-term enjoyment of multiplayer racing.

Poor etiquette leads to:

- Collisions and ruined races
- Kicks or bans from servers
- A damaged reputation

Your behaviour matters as much as your speed.

8.2. Blue Flags Explained

A blue flag indicates that a faster car is approaching to lap you.

Your responsibility:

- Remain predictable
- Hold your racing line
- Lift slightly on straights if needed

What not to do:

- Sudden braking
- Swerving off the racing line
- Blocking

Tip 18: Predictability is safer than trying to "help" aggressively.

8.3. Rejoining the Track Safely

After spinning or going off-track;

Correct procedure:

- Check mirrors
- Rejoin away from the racing line
- Wait if traffic is approaching

Incorrect behaviour:

- Rejoining immediately
- Blocking oncoming cars
- Accelerating blindly
-

Rule 6: The driver rejoining always yields.

8.4. Respecting Faster Drivers

Faster drivers are part of competitive racing.

Best practices:

- Do not block intentionally
- Observe their lines and braking points
- Learn from their consistency

Blocking a faster driver benefits no one and slows your own improvement.

8.5. Chat and Communication Discipline

Misuse of chat causes distractions and conflict.

Rules:

- No arguments during races
- No blaming or insults
- Keep communication brief

Proper use:

- Apologies
- Simple coordination
- Post-race discussion

Tip 19: Arguments never improve race outcomes.

8.6. Clean Racing Principles

Clean racing includes:

- Leaving space for the other driver
- Avoiding unnecessary contact
- Respecting track limits

Winning through contact is not winning.

8.7. Reputation and Long-Term Growth

Servers remember drivers who:

- Drive cleanly
- Finish races
- Act respectfully

Your reputation determines:

- Server access
- League invitations
- Quality of racing opponents

Consistency and respect open more doors than raw speed.

8.8. Key Takeaways

- Etiquette protects everyone
- Predictable driving prevents accidents
- Respect improves race quality
- Reputation matters

Race clean. Race smart.

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9. Hardware, Settings & Optimization

9.1. Why Hardware Matters

Hardware does not make you fast — but poor hardware can make you inconsistent. The goal is control and feedback, not realism.

9.2. Input Devices

Keyboard:

- High difficulty
- Limited throttle/brake control
- Usable for learning basics

Controller:

- Better Analog control
- Good entry option

Wheel:

- Best precision and feedback
- Most consistent results

Tip 20: Use what you have — upgrade only when fundamentals are solid.

Note:

Keyboard-only steering is the most difficult control method due to the lack of Analog input.
However, mouse steering combined with keyboard controls provides full Analog precision and is widely used by highly competitive Live for Speed drivers.

9.3. Force Feedback (If Using a Wheel)

Force feedback communicates grip and load.

Correct setup:

- Clear resistance buildup
- No clipping
- Subtle detail

Too much FFB causes:

- Fatigue
- Missed grip cues

9.4. Field of View (FOV)

Incorrect FOV distorts distance perception.

Effects of wrong FOV:

- Late braking
- Poor spatial awareness

Rule:

- Smaller screens → lower FOV
- Larger screens → higher FOV

Correct FOV improves consistency more than graphics.

Note:

You can use an online FOV calculator to determine your realistic FOV
Minimum FOV is recommended to be 90^0 *even for the smallest of screens*

9.5. Camera Settings

Recommended:

- Cockpit or driver view
- Fixed horizon
- Minimal camera movement

Avoid:

- Excessive shake
- Wide third-person views

9.6. Graphics & Performance

Smooth performance matters more than visuals.

Prioritize:

- Stable FPS
- Low input lag
- Tyre Rubber (to see which tyre slips)

Reduce:

- Shadows
- Reflections
- Post-processing

Stability beats beauty in sim racing.

9.7. Key Takeaways

- Hardware supports skill, not replaces it
- Stability improves control
- Correct FOV enhances judgment

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10. Conclusion & Resources

10.1. What You Have Learned

This guide has provided:

- Core sim-racing fundamentals
- Proper driving techniques
- Structured practice methods
- Online racing etiquette
- Hardware optimization basics

10.2. Realistic Expectations

This guide does not guarantee:

- Instant wins
- Professional careers

It guarantees:

- Correct foundation
- Safer progression
- Faster improvement

10.3. How to Progress Further

Next steps:

- Practice multiple tracks
- Join clean online servers
- Study faster drivers
- Compete consistently

Recommended Resources:

- Live for Speed official forums
- Community leagues
- Replay analysis tools

Avoid:

- Shortcut tutorials
- “Overpowered” setups

10.4. Final Advice

Sim racing rewards:

- Discipline
- Patience
- Respect

Smooth is fast. Fast is consistent.

Final Words

If you apply what you've learned and practice with intent, improvement is inevitable.

This guide is your **foundation**.

What you **build** on it is up to **you**.

Good Luck