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Improvement of Relative Performance in a Racing Driver: A Case Report

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ABSTRACT

Background: *In high-level motorsport, even marginal improvements in performance can have a decisive impact on competitive outcomes. Despite the growing interest in manual and non-pharmacological interventions aimed at optimizing driver preparation, evidence derived from real-world racing contexts remains limited.*

Case presentation: *This case report describes the evolution of the performance of a professional driver competing in the Ferrari Challenge Trofeo Pirelli during the World Finals event. Baseline data were obtained from official qualifying and race sessions conducted prior to a targeted manual intervention. Pre- and post-intervention performance was evaluated using official qualifying and race data from the World Finals.*

Intervention: *A structured manual intervention (DriveSense protocol) was performed between the baseline sessions and the World Finals. The intervention primarily targeted the cranio-cervical regions and neuromuscular modulation, with the aim of optimizing autonomic and neuromotor conditions prior to competition.*

Outcome: *Performance outcomes were assessed using best lap time, finishing position, and the delta relative to the session reference time, calculated as the average of the top 10 classified drivers for each session. Following the intervention, the driver achieved pole position in qualifying, recorded the fastest lap, and won the final race. A marked shift toward the most performant end of the lap-time distribution was observed.*

Conclusion: *In temporal association with the manual intervention, a significant improvement in relative performance was observed in a top-level motorsport context. Although a causal relationship cannot be established, the magnitude and timing of the observed changes support the need for further investigation into manual interventions applied in high-performance motorsport.*

Keywords: *High-Performance Motorsport, Manual Therapy, Neuromotor Regulation, Competitive Performance, Sports Performance Metrics, Autonomic Modulation*

Introduction

Performance in high-level motorsport is the result of a complex interaction between technical, physiological, neuromuscular, and cognitive factors. In highly regulated single-make championships, mechanical differences between vehicles are minimized, making even small performance variations potentially decisive for race outcomes.

Although numerous studies have investigated physical conditioning, reaction times, and cognitive load in drivers [1-4], less attention has been paid to the role of manual interventions applied in real competitive contexts. In particular, there is a scarcity of evidence describing measurable changes in performance following such interventions during official race events.

Case reports derived from authentic racing environments can provide valuable insights by documenting performance variations under conditions that cannot be replicated in laboratory settings. The aim of the present work is to describe a shift in relative performance observed in a professional Ferrari Challenge driver following a targeted manual intervention performed immediately prior to the World Finals.

Case Description

Athlete Profile

The subject of this case report is a professional driver competing in the Ferrari Challenge Trofeo Pirelli, Vincenzo Scarpetta. Participation in the study was voluntary, and the driver provided informed consent for the use of performance data, derived exclusively from official classification results.

The driver took part in the World Finals event after completing multiple official sessions at the Mugello circuit during the same race week.

Context

Data were collected from five official sessions conducted around the intervention period:

» Qualifying session (October 22, 2025)

» Race 1 (October 23, 2025)

» Race 2 (October 24, 2025)

» Qualifying session for the World Championship Final (October 25, 2025)

» World Championship Final Race (October 26, 2025)

Performance parameters, obtained from official documentation, included:

» Best lap time

» Finishing position

» Delta relative to the mean time of the top 10 classified drivers (fastest lap)

Intervention

The manual intervention applied in the present case is based on the protocol known as DriveSense [5], described in the literature as a structured manipulative treatment aimed at optimizing neuromuscular, neurovegetative, and motor coordination aspects in professional drivers. The DriveSense protocol combines glymphatic system drainage techniques with stimulation of the sympathetic nervous system through specific manipulations of the cranio-cervical region and the spinal column.

In a pilot experimental publication involving a group of professional drivers, the application of DriveSense was associated with a statistically significant improvement in lap times and driving accuracy, along with a reduction in lap-to-lap variability measured under controlled conditions before and after treatment. In particular, the study highlighted a mean decrease in lap times and in the "delta" parameter-an indicator of driving precision-following the manipulative treatment compared with control and placebo phases.

Outcome Measures

Data Sources

All outcomes were derived from official Ferrari Challenge classification results. Only objective and verifiable data were considered.

Performance Metrics

The metrics used to evaluate performance variations included:

» Best lap time

» Relative finishing position

» Delta between the driver's best lap time and the session reference time

Given the single-subject nature of the case report, no inferential statistical analysis was performed. The analysis focused on descriptive and relative comparisons.

Results

Pre-Intervention Performance

During the days preceding the intervention (October 22-24, 2025), the driver's performance was compared with the mean of the reference drivers' best lap times in order to assess relative performance.

- **22.10.2025**
  Scarpetta best lap: **2:18.414**
  Top 10 average best lap: **2:17.366**
  → **Delta +1.048 s**

- **23.10.2025**
  Scarpetta best lap: **2:18.241**
  Top 10 average best lap (n = 8): **2:18.704**
  → **Delta −0.463 s**

Methodological note: due to technical issues with telemetry affecting the 4th- and 10th-placed drivers, these subjects were excluded from the analysis. The reference mean was therefore calculated using only the remaining eight drivers within the top-ten group, in order to ensure the reliability of the comparison.

- **24.10.2025**
  Scarpetta best lap: **1:50.357**
  Top 10 average best lap: **1:50.343**
  → **Delta +0.014 s**

During the pre-treatment sessions, the driver demonstrated consistently competitive performance, generally placing in the upper part of the classification. However, he did not emerge as a dominant performance reference, with lap times noticeably distant from the session leaders.

This baseline profile describes a high-level athlete who is competitive but lacks clear performance dominance in the pre-intervention sessions.

Post-Intervention Performance

After the intervention, the driver took part in the World Finals qualifying session (October 25, 2025) and the final race (October 26, 2025).

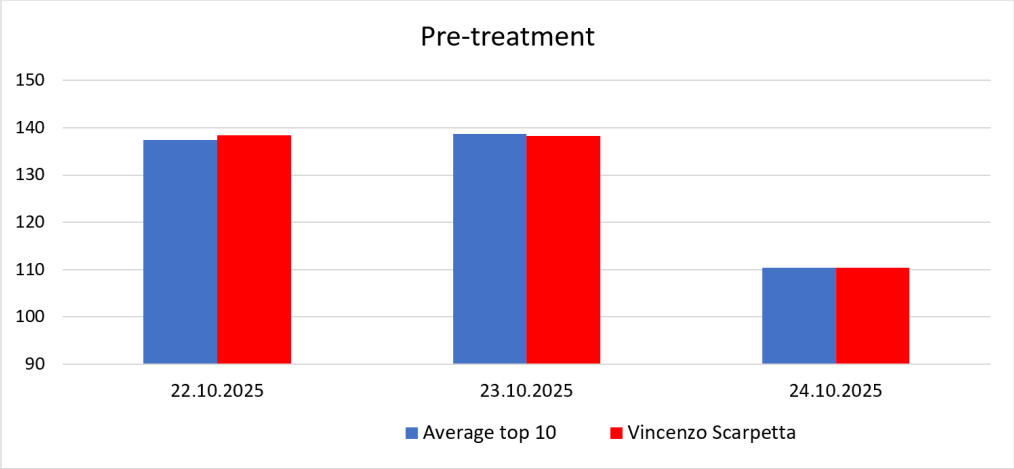
- **25.10.2025 (Qualifyng):**
  Scarpetta best lap: **2:04.441**
  Top 10 average best lap: **2:05.453**
  → **Delta −1.012 s** relative to the top-10 average

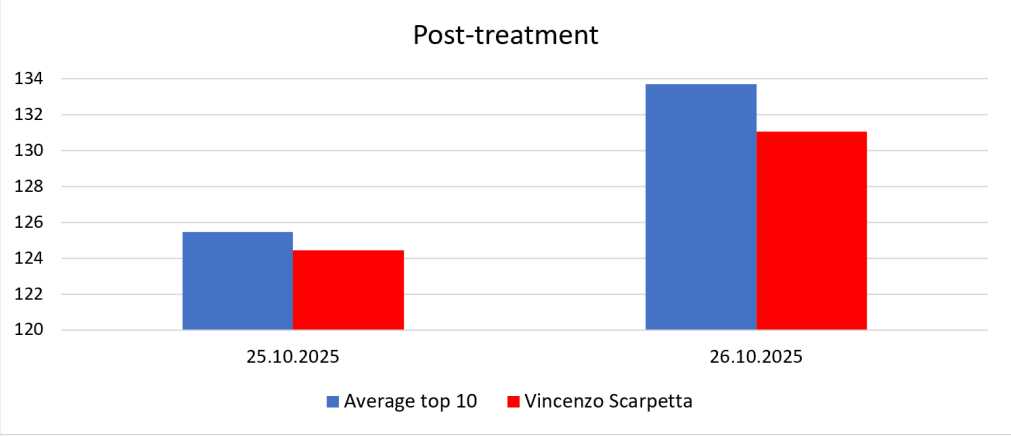
- **26.10.2025 (Race):**
  Scarpetta best lap: **2:11.057**
  Top 10 average best lap: **2:13.725**
  → **Delta −2.668 s** relative to the top-10 average

In these sessions, the driver also achieved:

» Pole position in qualifying
» Fastest overall lap time in qualifying
» Victory in the final race
» Fastest lap recorded during the race

Compared with pre-treatment conditions, the data show a clear and consistent shift in relative performance, moving from values close to the mean of the leading group to a stable and clinically meaningful superiority over the main competitors.





The graphs show a comparison between Vincenzo Scarpetta's lap times and the average of the top 10 drivers' best laps across the sessions considered, divided into pre-treatment and post-treatment phases.

On the x-axis, the analyzed race sessions are displayed; for each session, two values are reported: Scarpetta's lap time (red) and the average lap time of the top 10 drivers (blue).

On the y-axis, lap time is expressed in seconds.

In the pre-treatment graph (October 22-24, 2025), Scarpetta's lap times are essentially overlapping with the mean of the reference group, showing minimal and variable differences across sessions.

In the post-treatment graph (October 25-26, 2025), a clear reduction in Scarpetta's lap time relative to the top-10 average emerges, indicating an improvement in relative performance during the decisive sessions.

Discussion

Vehicle setup and race strategies represent potential driver-specific confounding factors that are not directly controllable within the competitive context analyzed. In contrast, track evolution and environmental conditions were experienced uniformly by all participants. The use of the average lap times of the top ten drivers as a reference helps mitigate the impact of variations related to weather or track surface conditions, which affect the entire group in a comparable manner, thereby reducing the weight of shared environmental factors in performance evaluation.

In this context, the use of relative performance metrics-such as finishing position and temporal delta relative to reference times-strengthens the interpretation of the observed shift. The transition from a state of stable competitiveness to one of marked performance dominance within the same competitive scenario constitutes a functionally relevant change, even in the absence of a controlled experimental design.

The applied manual interventions may have contributed to this change through effects on neuromuscular coordination, perceptual readiness, and autonomic regulation-key components in high-performance driving. Although a detailed analysis of the underlying physiological mechanisms is beyond the scope of the present work and does not allow for definitive causal inferences, the observed results suggest a potential role for manual interventions as part of an integrated performance-support approach in motorsport.

Limitations

» The present work has several limitations:
» Single-subject design (n = 1)
» Absence of lap-by-lap data
» Inability to isolate individual performance determinants
» Observational nature of the findings

Future studies with larger samples, repeated measures, and additional physiological or cognitive markers are needed to further investigate these aspects.

Conclusions

This case report describes a marked shift in relative performance observed during the Ferrari Challenge World Finals, in temporal association with a targeted manual intervention. Although a causal relationship cannot be inferred, the findings suggest that applied manual strategies may warrant further investigation within the context of high-level motorsport.

Conflicts of Interest

The authors declare no conflict of interest and received no specific funding for this work.

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