Protecting Football Players' Brains: Breakthrough Study Reinforces Vielight's Red-Light Therapy Technology

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A new study in the ***Journal of Neurotrauma*** offers the first real-world solution to a long-standing problem in football: protecting players' brains from the silent damage of repeated head impacts. Conducted over a full NCAA Division one season, the research shows that **Vielight's Neuro Gamma device**, **a patentedintranasal and transcranial photobiomodulation (itPBM) system**, may stabilize- and even *improve*- brain markers linked to neuroinflammation and axonal stress. This revelation suggests athletes could potentially safeguard neurological health without reducing playing time or contact exposure.

Unlike cosmetic or consumer light-based devices commonly used for skin or hair health, this study evaluated a specialized, medical-grade itPBM system, engineered to deliver pulsed near infrared light to brain tissue and specific networks.

The study's results have **already influenced decision-making at the institutional level:**

"We have seen compelling evidence that has driven our decision to incorporate the use of the Vielight Neuro Duo as part of the standard equipment for all our athletes", says **Tom Holmoe, former Athletic Director at BYU.** "*I am proud that BYU will be the first to deploy technology that I believe will become a standard in the collision sports industry."*

BYU's offensive lineman, Joe Lapuaho, emphasized the broader horizon. *"My mental part of the game definitely went light years ahead," he said. "And for me, this goes beyond football. I want to be able to raise a family, have a wife and kids."*

The Gap in Research

Football is defined by contact. In a single season, players experience hundreds to thousands of repeated head acceleration events. While many of these short-duration collisions do not result in a diagnosed concussion, these impacts are increasingly recognized as **key drivers of cumulative neuroinflammation and microstructural stress in the brain** that can build silently over time and degrade athletes' neural integrity long before symptoms ever appear.

Despite growing attention within the sports medicine and athletic performance fields, **an intervention has never been evaluated** under real-world training and game conditions, until now.

About the Study

In collaboration with the University of Utah and Brigham Young University (BYU), the study followed NCAA Division I football players across a full 16-week competitive season. Twenty-six athletes were randomized to receive either active or sham **Vielight Neuro Gamma itPBM devices**, administered for 20 minutes three times per week, under supervision in the team's athletic training facility.

To assess neurological changes that may be undetectable with conventional imaging, the researchers collected advanced diffusion MRI scans before and after the season. These scans are sensitive to **neuroinflammation** and **axonal microstructural integrity** - two key processes affected by repeated head impacts.

- **Neuroinflammation** reflects the brain's immune response to prolonged stress, injury, and strain.
- **Axonal injury** involves disruption to communication pathways between brain regions.

These systems underlie reaction time, coordination, decision-making, and fatigue resistance, functions that are central to both in-season performance and long-term neurological health.

Remarkable Differences After One Season

Athletes who received active itPBM showed **significant pre- to post-season changes across multiple brain regions**. Most notably, several regions demonstrated ***reductions*** **in markers of neuroinflammation and axonal stress compared to pre-season baseline**, suggesting **preserved or restored neural integrity rather than a reactive stress response**. Overall, these players maintained **relative stability in their neuroinflammatory and axonal injury markers**.

In contrast, players in the sham group experienced **widespread increases in diffusion MRI markers** associated with neuroinflammation and axonal stress, consistent with cumulative exposure to repeated head impacts.

These differences emerged after a *single* competitive season, despite both groups experiencing equivalent contact exposure, suggesting that itPBM may help **support the neural foundations of performance, recovery, and long-term wellbeing**, even during ongoing physical stress.

Implications for the Future of Sport

Repetitive head acceleration events are increasingly recognized as a **critical health and performance challenge** in football and other contact sports, from youth leagues to elite competition. Although advances in equipment, training, and injury protocols have improved acute safety, they rarely address the cumulative inflammatory and microstructural stress that develops over the course of a season.

By demonstrating measurable neurological benefits for athletes *without* altering participation or contact exposure, the findings point to a non-invasive, scalable strategy that complements existing safety frameworks and **shifts focus from reactive injury management toward proactive neurological protection.**

This latest study builds on earlier peer-reviewed research involving Vielight Neuro technology with current and former athletes, reinforcing prior findings related to brain health, cognitive performance, inflammation, and indicators associated with head-impact exposure.

The authors note that further research is warranted, including examination of larger cohorts and multi-season follow-ups. Nevertheless, these findings illuminate the hidden inflammatory toll of contact sports and suggest that **itPBM mayenable athletes to sustainboth peak performance and lasting brain health.**

Available for Interview

Dr. Lew Lim | CEO, Vielight Inc. | Lead Researcher on itPBM technology

Dr. Larry Carr | Adjunct Professor, University of Utah School of Medicine

Dr. Elisabeth Wilde | Co-Director of the Traumatic Brain Injury and Concussion Center, University of Utah

Tom Holmoe | Former Athletics Director, Brigham Young University | Recipient of 4 Super Bowl rings

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About Vielight Inc.

Vielight Inc. is a Toronto-based medical device research and technology company developing non-invasive photobiomodulation systems for use in clinical research and regulated healthcare settings. Vielight devices have been used in investigator-led studies exploring neurological, cognitive, and systemic conditions.

Forward-Looking Statement Disclaimer

This press release contains statements related to exploratory research, and is based on current expectations and involve risks and uncertainties. The findings described are preliminary in nature and require further research with adequately powered studies.

Attachments

- Vielight's Neuro Gamma intranasal and transcranial photobiomodulation (itPBM) device.
- Longitudinal changes in RDI (neuroinflammation marker) and QA (axonal remodeling marker) in Sham vs Active PBM groups.

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