AAN 72nd ANNUAL MEETING ABSTRACT

Media Contacts:
Renee Tessman, rtessman@aan.com, (612) 928-6137
Michelle Uher, muher@aan.com, (612) 928-6120

Abstract Title: Improvement in Mood in Patients Receiving Blue Light Therapy Following a Mild Traumatic Brain Injury (mTBI)

Press Release Title: Can Light Therapy Help Improve Mood in People with Concussion?

Authors: Bradley Shane[1], Adam Raikes[1], Natalie Dailey[1], Brittany Forbeck[1], William Killgore[1]

[1]The University of Arizona College of Medicine Tucson

Objective: We hypothesized that individuals who receive morning blue light therapy (BLT) will demonstrate a decrease in depressive symptoms as measured by the Beck Depression Inventory (BDI), and that decreased depressive symptoms will be associated with a decrease in concussion symptoms as measured by the Rivermead Post-Concussion Symptoms Questionnaire (RPQ).

Background: Patients who sustain a mTBI often develop persistent post-concussive symptoms such as issues with concentration, mental health, and sleep. Research demonstrates that morning blue light exposure leads to circadian phase advancement, and thus improved sleep efficiency, and daytime alertness. Additionally, it is widely accepted that by achieving better sleep, mood is improved.

Design/Methods: In this double-blind randomized control trial, thirty-five participants with a documented mTBI in the past 18 months were assigned to the BLT (5M, 12F, mean age=25.5 ± 8.7 years) or the placebo amber light therapy (ALT) (8M, 10F, mean age = 26.3 ± 7.6 years). Neurocognitive testing was performed at baseline and after 6 weeks of treatment. Here we examined the group-wise association between changes in BDI scores and RPQ scores.

Results: Analyses show significant pre- to post-treatment between group differences, with lower depression severity in the BLT group, when compared to the ALT group $F(1, 33)=4.135$, $p=0.05$. Changes in BDI scores were significantly, positively associated with changes in chronic ($r=0.699$, $p=0.002$), cognitive ($r=0.583$; $r=0.014$), and somatic ($r=0.525$, $p=0.031$) post-concussive symptoms for the BLT group but not for the ALT group.

Conclusions: BLT appears to be an effective treatment for decreasing depression following a mTBI. This improvement is associated with improved post-concussive symptoms on the RPQ, specifically the cognitive and somatic subscales, as well as RPQ-13, which reflects more chronic post-concussion symptoms. These results reinforce that BLT may be an effective, non-pharmacological treatment for mTBI and that improvements in depression may result in improvement in post-concussion cognitive function and physical symptoms, and thus improve quality of life.