ADVANCES
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Yoga Practice Facilitates Prefrontal Oxygenation and Working Memory in Type 2 Diabetes Mellitus Patients: A Pilot Study

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ABSTRACT

Background • Type 2 diabetes mellitus (T2DM) is associated with cognitive decline. Lifestyle behaviors such as yoga practices play a significant role in preventing cognitive decline.

Purpose • The goal of this study was to assess the effect of yoga intervention on working memory and prefrontal cortex (PFC) oxygenation in T2DM patients.

Methods • Twenty T2DM participants, aged between 40 and 60 years, volunteered for a 6-week study. Participants were randomized into a yoga practice (n = 10) and a waitlist control group (n = 10). The n-back task was administered to evaluate working memory before and after the intervention. While performing the working memory task, PFC oxygenation was monitored using functional near-infrared spectroscopy.

Results • The yoga group showed a significant improvement in working memory performance. The accuracy improved in 1-back

(mean difference of 4.73%, 95% CI[0.69,8.77], *P* = .026) and 2-back (8.0%, 95% CI[1.89,14.1], *P* = .016) task conditions. The reaction time improved in 0-back (mean difference of -79.07 milliseconds, 95% CI[-128.3,-29.8]), 1-back (mean difference of -119.17 milliseconds, 95% CI[-217.5,-20.8]) and 2-back (-76.06 milliseconds, 95% CI[-148.8,-3.3]) task conditions. In the yoga group, at post-intervention, higher oxygenation was observed during 0-back and 1-back task conditions (Beta coefficient mean difference of 211.3, 95% CI[2.8, 420.0], *P* = .048 and 80.5, 95% CI [3.7,157.2], *P* = .042 respectively) in the left PFC region compared to the pre-intervention values. The control group showed no significant change in working memory performance and PFC oxygenation.

Conclusions • The study suggests that yoga practice may improve working memory performance and facilitate higher PFC oxygenation in T2DM patients. Further studies with a larger sample and a longer intervention period are required to strengthen the findings. (*Adv Mind Body Med.* 2023;37(2):24-31.)

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