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Original Research Paper

Effect of a structured yoga module on selected motor and cognitive variables among individuals with alcohol withdrawal symptoms

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ABSTRACT

The withdrawal of alcohol may influence cognitive as well as motor functioning. This paper has investigated the relationship between a structured yoga module and the change in outcomes in adults in withdrawal. There was a two-group pre-test-post-test study with 90 participants (45 in the yoga group and 45 controls). The Montreal Cognitive Assessment, right and left tapping, ruler-drop and single-leg stance were used to determine outcomes. Comparisons of change scores were in favour of yoga in all five outcomes ($p < .001$). The yoga group exhibited an upward mean change of 2.73 points, and the controls had a change of 0.58. Gains in tapping were greater, distance between ruler-drop decreased more, and time in stance doubled in the yoga group. Group-by-time tests, however, did not show any significant interaction in either of the tapping outcomes; MoCA was marginally significant ($p = .049$), ruler-drop and stance interactions were, however, significant ($p < .001$). Findings are indicative of potential advantages, but baseline MoCA imbalance, non-random assignment and conflicting tests prevent causal inferences. These findings need to be confirmed by further controlled research.

Keywords: Alcohol withdrawal; yoga intervention; cognitive function; motor performance; postural balance.

INTRODUCTION

Alcohol withdrawal syndrome (AWS) is a condition that can occur when an individual who has had long-term excessive alcohol consumption significantly reduces their consumption or completely ceases. It has both mild and severe symptoms, and medically assisted withdrawal is a significant component of care (Day and Daly, 2022). Day and Daly (2022) outline a potential cognitive disability in recollection, executive and visuospatial functions of individuals with alcohol dependence, which suggests the need to measure cognition in addition to clinical manifestations at the withdrawal stage.

One of the proposed complementary approaches is yoga; however, evidence is still scarce. Walia *et al.* (2021) conducted a review of eight randomised trials and found that results were encouraging but not enough to draw firm, substance-specific conclusions. In a timely trial, Yadav *et al.* (2021) randomised 80 male inpatients with alcohol dependence to standard treatment with or without six-day breathing and relaxation training. But these results are not enough to determine a cognitive or motor performance increase, and such a male inpatient sample is not necessarily generalisable. Thus, the research investigates the alterations in the chosen cognitive and motor outcomes after a yoga course to participants with alcohol withdrawal symptoms.

LITERATURE REVIEW

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Indication of yoga to treat substance-use disorders is promising, yet its applicability to cognitive and motor recovery is unclear. Walia *et al.* (2021) provide a review of eight randomised controlled trials; seven of them indicated significant improvement in such outcomes as anxiety, pain or substance use. Two of the studies did carry some risk-of-bias issues, though, and the authors requested larger studies. Multi-substance and multi-measure positive results do not, therefore, provide a consistent effect on alcohol withdrawal, cognition or motor control. Yadav *et al.* (2021) conducted an alcohol-specific clinical trial to randomise 80 male inpatients with alcohol dependence to either standard care with six days of Sudarshan Kriya breathing and relaxation training or no treatment. This additional training enhanced wellbeing and had a lower AUDIT score and reduced drinking at six months. Nonetheless, these behavioural results do not indicate improvements in MoCA, tapping, reaction time or balance; the sample size (all male) and short intervention also hamper generalisation.

Existing data on alcohol-associated cognition and motor functioning suggests the reason why the effect of interventions should be interpreted. Day and Daly (2022) define impairment in memory, executive and visuospatial abilities in alcohol dependence, and indicate that recovery timelines differ by domain: certain cognitive domains might be alleviated in 7-14 days of abstinence, which is the case with visuospatial and perceptual-motor problems. Their clinical assessment aids in assessment; however, it does not test yoga. In line with variable recovery, Sachdeva *et al.* (2024) observed massive improvement after seven days of detoxification, but minor impairment of attention, recall, language and vasoconstriction was still present in 63 male individuals. The non-detoxification comparison is absent, and it is hard to delineate the effects of treatment and the effects of early recovery. In the figure below, Ray and Mukherjee (2023) illustrates general alcohol-related brain effects, rather than yoga or withdrawal specifically.

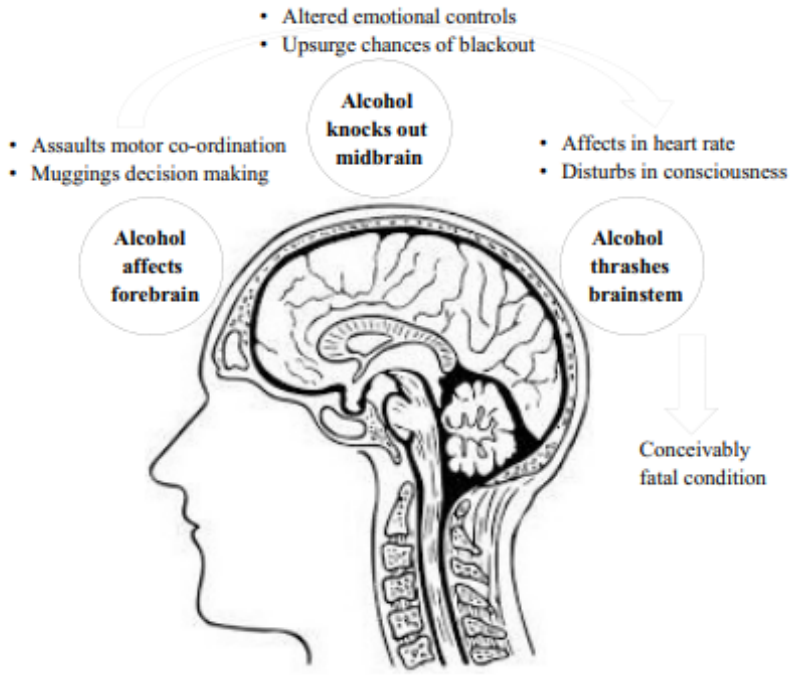


Figure 1: A simple representation of how alcohol attacks the brain

(**Source:** Ray and Mukherjee, 2023)

The synthesis made by Powell *et al.* (2024) comprised 18 longitudinal studies, of which 16 were analysed by narrative synthesis. They discovered that there was numerous attention, executive, perceptual and memory subdomains that were near-normal after 6-12 months; basic processing speed might increase sooner. The yoga and control groups on MoCA could fill this gap through comparisons of the groups in terms of finger tapping, ruler-drop and stance measures, although natural recovery and baseline differences.

METHODOLOGY

A purposive sample was used to recruit 90 adults who were hospitalized with alcohol withdrawal symptoms. The participants were adults (18 years and above) who were medically stable and capable of undergoing mild movement. Participation was not possible in cases of acute instability or limitations of mobility. The participants were not randomly assigned to either the experimental (n=45) or control group (n=45). Once medically stable, the experimental group had to undergo a 30-minute yoga session seven days in a row, which

included joint loosening, easy poses, controlled breathing and guided relaxation, in addition to standard withdrawal care. The control group was accorded regular care. The notes of the sessions and attendance were taken, and yoga-intervention reporting guidance was adhered to (Moonaz *et al.* 2021). The condition of comparison was specified in accordance with the recommendations to report control-intervention (Hohenschurz-Schmidt *et al.* 2023).

The same procedures were conducted by the same set of procedures on both groups to measure motor and cognitive outcomes before and after the intervention. The Montreal Cognitive Assessment (MoCA) was used to measure cognitive performance. Standardized measures were administered by a trained assessor, using standardized instructions, and scored on structured forms. Demographic and alcohol-use history and the severity of withdrawal were documented with the Clinical Institute Withdrawal Assessment for Alcohol-Revised (CIWA-Ar).

Descriptive statistics were used to summarize the characteristics of participants and outcome scores of outcomes. Paired comparisons were used to analyse within-group pre-test-post-test changes; between-group differences in change scores were independently evaluated. An analysis by group (by time) was used to determine whether there were differences in outcome trajectories between arms. Baseline scores were taken into account when interpreting results. This analysis type aids in the comparison of change in the arms of a pre-test-to-post-test study (Wan, 2021).

FINDINGS

Table 1: Pre-test–post-test results and group comparisons

Outcome	Yoga group, pre → post M (SD)	Control group, pre → post M (SD)	Paired p, yoga/control	Change difference, yoga − control (95% CI)	Change t(88), p	Group × time F(1,86), p; partial η²
MoCA	21.51 (1.79) → 24.24 (1.43)	19.80 (1.95) → 20.38 (2.38)	<.001 / .017	2.16 (1.59, 2.72)	7.588, <.001	3.980, .049; .044
Right-hand tapping	34.02 (2.32) → 36.69 (2.32)	34.02 (2.32) → 34.49 (2.38)	<.001 / .049	2.20 (1.58, 2.82)	7.007, <.001	.003, .954; .000
Left-hand tapping	31.27 (2.03) → 34.04 (2.12)	31.27 (2.03) → 32.60 (2.50)	<.001 / <.001	1.44 (.74, 2.15)	4.051, <.001	.698, .406; .008
Ruler-drop distance	25.00 (3.86) → 20.80 (2.78)	25.80 (3.89) → 25.67 (4.31)	<.001 / .360	−4.07 (−4.52, −3.61)	−17.710, <.001	86.410, <.001; .501
Single-leg stance	17.93 (4.79) → 25.91 (4.04)	17.51 (4.24) → 17.76 (4.63)	<.001 / .070	7.73 (7.34, 8.13)	39.142, <.001	48.839, <.001; .362

(**Source:** Self-made)

Paired p-value tests assess change within groups; change-score tests compare groups. Measurement units are not mentioned in the output. The values are given as means and standard deviations; change estimates are for experimental versus control groups.

Changes were observed in all five measures in the experimental group. MoCA increased by 2.73 (compared with 0.58 in controls), but the yoga group began higher at post-test by 1.71; thus, the post-test difference should be interpreted in conjunction with this baseline difference. There was an increase in right-hand tapping by 2.67 and left-hand tapping by 2.78. There was also an increased improvement in controls on both tapping measures, albeit not as much. The same baseline tapping means among groups need to be compared with the initial data.

Paired tests indicate substantial change from pre-test to post-test on all outcomes of the experiment (p <.001). The difference between controls (MoCA p =.017), tapping (right p = .049; left p < .001) showed a significant difference, but not for ruler-drop (p = .360) and stance (p = .070). The tendency indicates more than just a change in the yoga group; such significance in one group and not the other will not alone create a group difference; direct between-group tests are necessary.

The distance of the experimental group ruler-drop dropped by 4.20, as compared to the control by 0.13; stance rose by 7.98 compared to 0.24. All the independent comparisons of the change scores were significant (p <.001), and the confidence intervals did not include zero. The ruler-drop finding is the numerical decrease; this finding is interpreted to be an improved response, which depends on the direction of scoring the test.

Group-by-time tests are also reported by the output.

These differences in support groups between ruler-drop and stance are borderline MoCA interaction (p = .049). There are no tapping interaction effects (right p = .954; left p = .406) with the highly significant tests of change-score interactions. Since the output does not provide any model or covariate information to justify this dissimilarity, the results of the inferential findings need to be confirmed. The imbalance of non-random allocation and the MoCA baseline do not allow attributing causality to yoga either.

DISCUSSION

Pre-post changes in the yoga group were found to be larger than the controls, although there is not solid evidence that there was a yoga-specific effect. Yoga was chosen as preferred in all five measures by change-score tests compared to group-by-time tests, which showed no significant tapping interactions. This discrepancy undermines the motor results and needs to be clarified regarding the model.

The thought pattern partially concurs with Sachdeva *et al.* (2024), who also reported that when short-term detoxification was applied, they could also see improvement; still, this is why change cannot be inherently linked to yoga: both abstinence and withdrawal stabilisation could positively affect functioning. Powell *et al.* (2024) also indicate recovery in cognitive domains over time, but there is a lack of evidence with regard to motor and perceptual recovery as well. This recovery can be explained by control-group gains with MoCA and tapping. The findings that Day and Daly (2022) found that there are cognitive and motor problems during withdrawal validate the applicability of these outcomes yet do not prove that yoga speeds up recovery.

The substantial ruler-drop and stance interactions are promising, though there is limited interpretation due to the fact that the output does not include measurement units and direction of scoring of the ruler-drop performance. Walia *et al.* (2021) reported that overall, there were positive substance-use results in yoga trials, but with small samples and risk-of-bias issues. In Yadav *et al.* (2021), a breathing-based intervention also had benefits, but it was wellbeing and drinking, not motor or cognitive performance, that were measured. This research builds on that study and is able to come up with functional measures but cannot determine that yoga brought about the changes. The statistical significance does not determine clinical significance either, as no report of thresholds of significant changes exists with these measures.

CONCLUSION

The analysis in this study concluded that more pre- and post-comparisons of the yoga group showed significant improvement in terms of both cognitive and motor outcomes, but the control participants also had improved outcomes. The findings indicate that structured yoga can be used in the recovery of alcohol withdrawal care; although the statistical tests used are contradictory, the baseline differences in MoCA, and not random group allocation, undermine the belief in the effect of the treatment. The results are to be taken as preliminary, then. More research ought to employ explicit allocation steps, standardized test marks and regular group-over-a-period testing to examine the contribution of yoga dependably.

REFERENCES

Day, E. and Daly, C., 2022. Clinical management of the alcohol withdrawal syndrome. *Addiction*, *117*(3), pp.804-814.

Hohenschurz-Schmidt, D., Vase, L., Scott, W., Annoni, M., Ajayi, O.K., Barth, J., Bennell, K., Berna, C., Bialosky, J., Braithwaite, F. and Finnerup, N.B., 2023. Recommendations for the development, implementation, and reporting of control interventions in efficacy and mechanistic trials of physical, psychological, and self-management therapies: the CoPPS Statement. *bmj*, *381*.

Moonaz, S., Nault, D., Cramer, H. and Ward, L., 2021. CLARIFY 2021: explanation and elaboration of the Delphi-based guidelines for the reporting of yoga research. *BMJ open*, *11*(8), p.e045812.

Powell, A., Sumnall, H., Smith, J., Kuiper, R. and Montgomery, C., 2024. Recovery of neuropsychological function following abstinence from alcohol in adults diagnosed with an alcohol use disorder: Systematic review of longitudinal studies. *PloS one*, *19*(1), p.e0296043.

Ray, S.K. and Mukherjee, S., 2023. Neuropharmacology of Alcohol Addiction with Special Emphasis on Proteomic Approaches for Identification of Novel Therapeutic Targets. *Current Neuropharmacology*, *21*(1), pp.119-132.

Sachdeva, A., Chandra, M., Khullar, S. and Abbas, S.Z., 2024. Cognitive deficits persisting in patients with alcohol dependence syndrome after detoxification. *Industrial psychiatry journal*, *33*(2), p.292.

Walia, N., Matas, J., Turner, A., Gonzalez, S. and Zoorob, R., 2021. Yoga for substance use: A systematic review. *The Journal of the American Board of Family Medicine*, *34*(5), pp.964-973.

Wan, F., 2021. Statistical analysis of two arm randomized pre-post designs with one post-treatment measurement. *BMC medical research methodology*, *21*(1), p.150.

Yadav, P., Chatterjee, K., Prakash, J., Salhotra, N., Chauhan, V.S. and Srivastava, K., 2021. Impact of breathing and relaxation training (Sudarshan Kriya) on cases of alcohol dependence syndrome. *Industrial Psychiatry Journal*, *30*(2), p.341.