Supplementary Online Content

Cooperman NA, Lu SE, Hanley AW, et al. Telehealth mindfulness-oriented recovery enhancement vs usual care in individuals with opioid use disorder and pain: a randomized clinical trial. *JAMA Psychiatry*. Published online December 7, 2023. doi:10.1001/jamapsychiatry.2023.5138

eTable. More Session Content

eAppendix. Supplemental Details on EMA Pain Rating Model

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable. More Session Content

Week	Theme
1	Introduction to mindfulness, and the relationship between nociception, pain, and emotional suffering; mindful breathing and body scan
2	Automatic pain coping habits; awareness of automatic opioid use; instruction in mindfulness of automatic pilot; mindful breathing
3	Mindful reappraisal as means of coping with negative emotions; mindful breathing
4	Savoring natural rewards; positive emotion regulation; mindful savoring practice
5	Mindfulness of opioid craving; contemplation of negative consequences of opioid use; imaginal opioid cue-exposure; mindful breathing
6	The relationship of the stress response to pain and craving; imaginal stress exposure; mindful breathing; body scan
7	Concepts of thought suppression, aversion, and attachment; exercise in the futility of thought suppression; mindful breathing and acceptance
8	Discussion of how to maintain mindfulness practice; finding a sense of meaning and purpose of life; development of mindful recovery plan; imaginal rehearsal of skill learning; mindful breathing

eAppendix. Supplemental Details on EMA Pain Rating Model

Regarding the analysis of EMA pain ratings, the mixed model included the EMA pain rating as the dependent variable, and Weeks, Treatment (MORE vs. TAU), Weeks x Treatment interaction, and covariates (e.g., standard clinic counseling time during the 16-weeks, and, at baseline, recent illicit drug use, methadone dose, and time in methadone treatment) as fixed effect independent variables. Both Weeks and treatment (MORE vs. TAU) were treated as discrete categorical variables. Patient was treated as a random effect to account for the intra-person correlation between the repeatedly measured EMA outcomes. Specifically, the statistical model is specified in equation (1):

$$y_{ijk} = u_i + \beta_0 + \sum_{j=2}^{16} \beta_j I(week = j) + \alpha \times Teatment_i + \sum_{j=2}^{16} \gamma_j Teatment_i \times I(week = j) +$$
$$covariates(e.g., clinic couseling\ time,\ recent\ illicit\ drug\ use + etc.) + \varepsilon_{ijk},\ (1)$$

where y_{ijk} denotes the kth EMA response in week j of the ith participant, for k=1,2,…, n_{ij}, j=1,2,…,16 and i=1,2,…15x, $I(week = j)$ is a binary indicator with value 1 if week=j, and value 0 if otherwise, and Txt_i=1 if MORE and 0 if TAU, u_i is a random intercept to account for the intra-person correlation, and ε_{ijk} represents the random error. Moreover, u_i is assumed to follow a normal distribution with mean zero and variance σ_α^2, ε_{ijk} is assumed to follow a normal distribution with mean zero and variance σ_ε^2, and u_i and ε_{ijk} are assumed to be independent.

The treatment effect of MORE vs. TAU was represented by the Weeks x Treatment interaction ($\gamma_j's$) as it represents the difference in the longitudinal trend in the EMA outcomes between MORE and TAU. The Weeks x Treatment interaction (Hypothesis H_0: $\gamma_2=\gamma_3=…=\gamma_{16}=0$) was tested using the Type 3 F test (controlling for the other variables in the statistical model).