

# Changes in Tic Suppression Ability and Urge Intensity over a 10-week Habit Reversal Training in Patients with Tourette Syndrome.

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## Background

Research showed that 90 % of adults with Tourette syndrome report an urge right before executing a tic (Woods et. al., 2008). According to the official guidelines Habit Reversal Training (HRT) can reduce tics, however underlying therapeutic mechanisms are still unclear (Ueda & Black, 2021). It has been reported that the urge increases right before the tic and decreases after executing the tic (Reese et. al., 2014). This further lead to the hypothesis, that the urge maintains the tic due to negative reinforcement. Therefore exploring the urge is an important factor in the maintenance of tics that we are trying to asses further in this study (McGuire et. al., 2015).

## Methods

N = 23 patients received 10 weeks of HRT. Before and after each therapy session, patients were asked to report their urge to tic using the real-time urge monitor (*Figure 1*) during 5 minutes of free ticcing and 5 minutes of tic suppression. We present preliminary data of 19 patients with the mean age of 35.1 years (10% female) who have finished their course of therapy.

The intraclass coefficient of the two blinded raters was found at .97, which suggests a high interrater reliability.

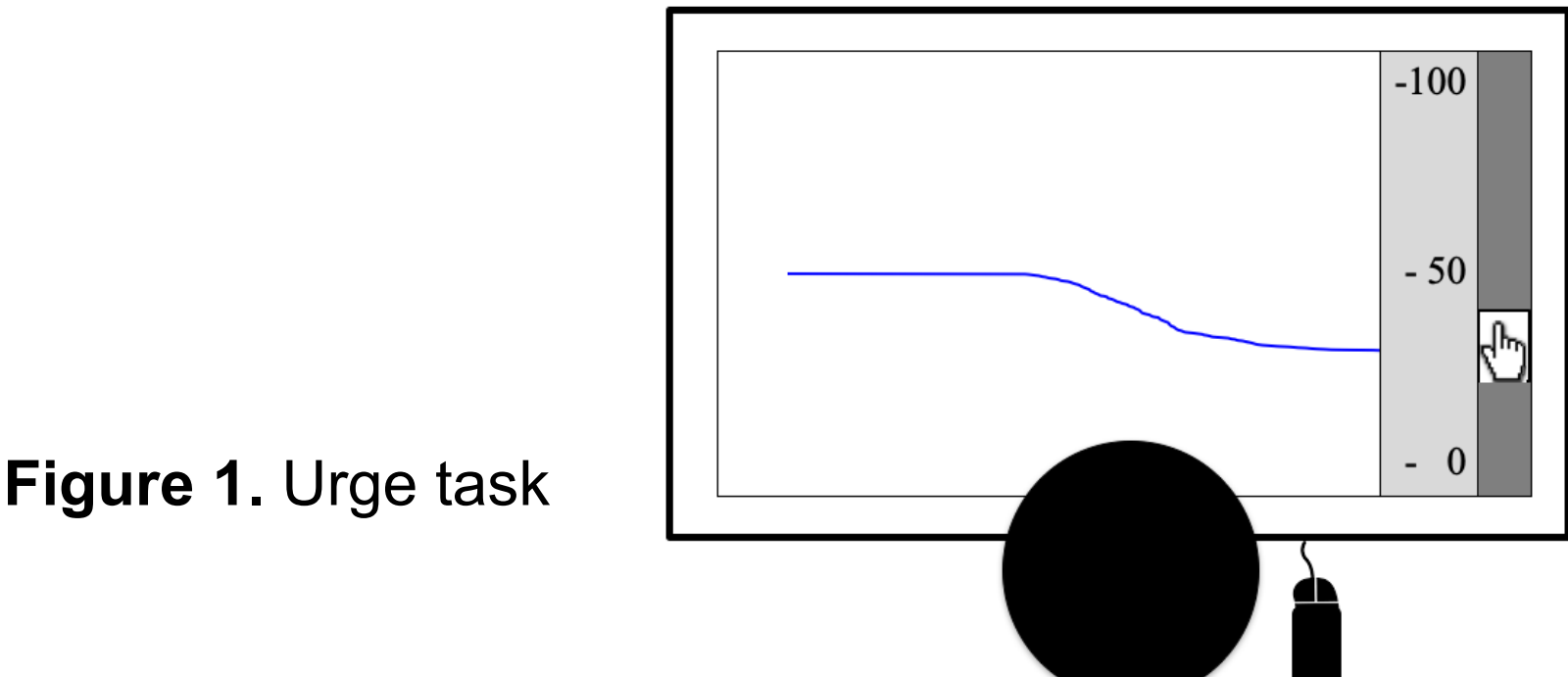


Figure 1. Urge task

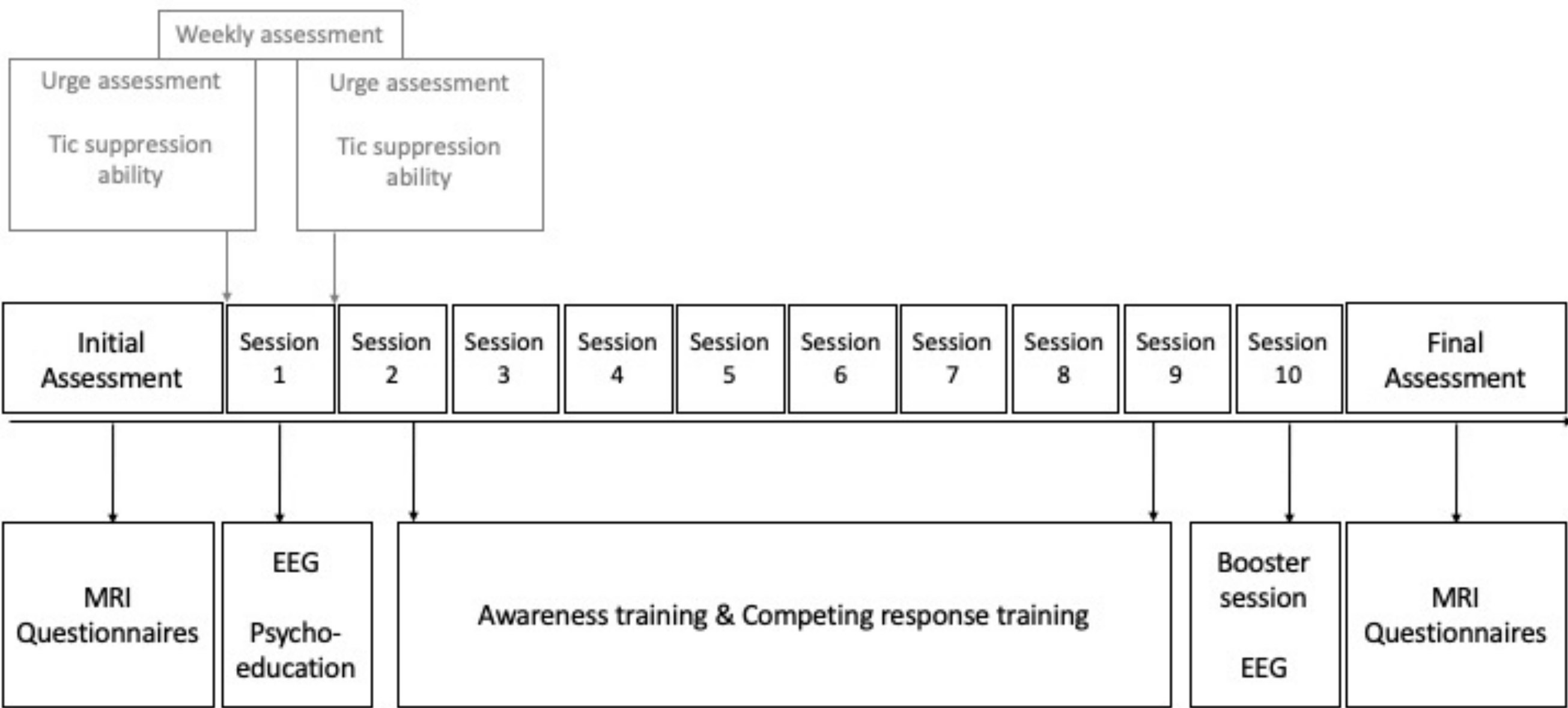


Figure 2. study design

## Results

### Urge intensity over the course of 10 therapy sessions

- A significant main effect across the sessions [ $F(2.640, 11) = 4.733, p = .007, \eta^2 = .191$ ]
- A significant interaction between suppression condition and pre/post measurement [ $F(1, 20) = 17.198, p < .001, \eta^2 = .462$ ]
- A significant interaction between sessions and pre/post measurement [ $F(5.897, 11) = 2.810, p = .014, \eta^2 = .123$ ]
- A significant interactions between sessions and suppression condition [ $F(5.031, 11) = 4.619, p < .001, \eta^2 = .188$ ]

### Tic frequency over the course of 10 therapy sessions

- A significant main effect of measurement pre/post therapy session [ $F(1, 18) = 9.639, p = .006, \eta^2 = .349$ ]
- A significant main effect for suppression condition [ $F(1, 18) = 21.800, p < .001, \eta^2 = .548$ ]
- A significant main effect across sessions [ $F(1, 18) = 2.577, p = .057, \eta^2 = .125$ ]
- No significant interactions were found

\* Significant differences tested via post-hoc t-tests are shown (*Figure 3, Figure 4*).

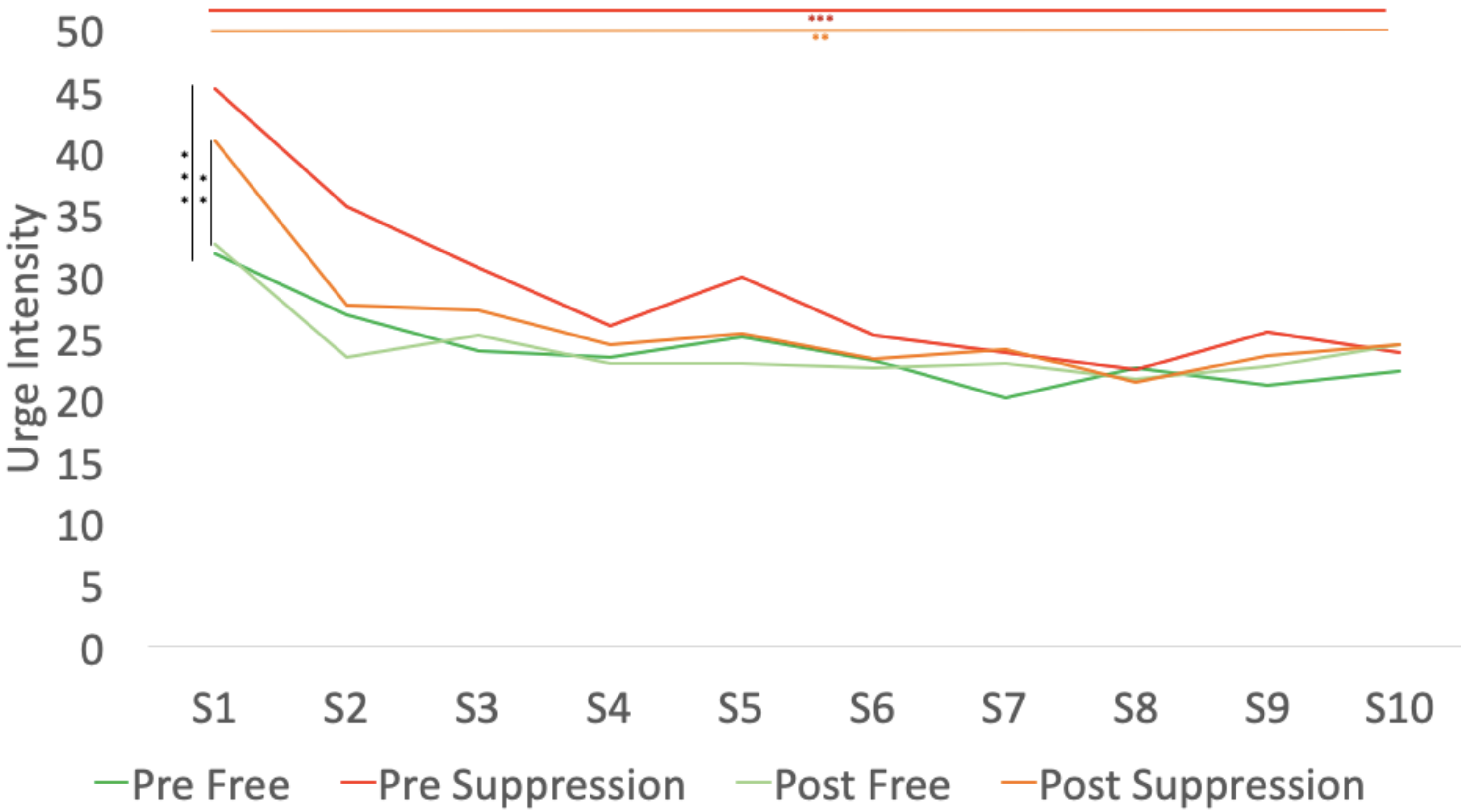


Figure 3. Urge intensity over the course of therapy

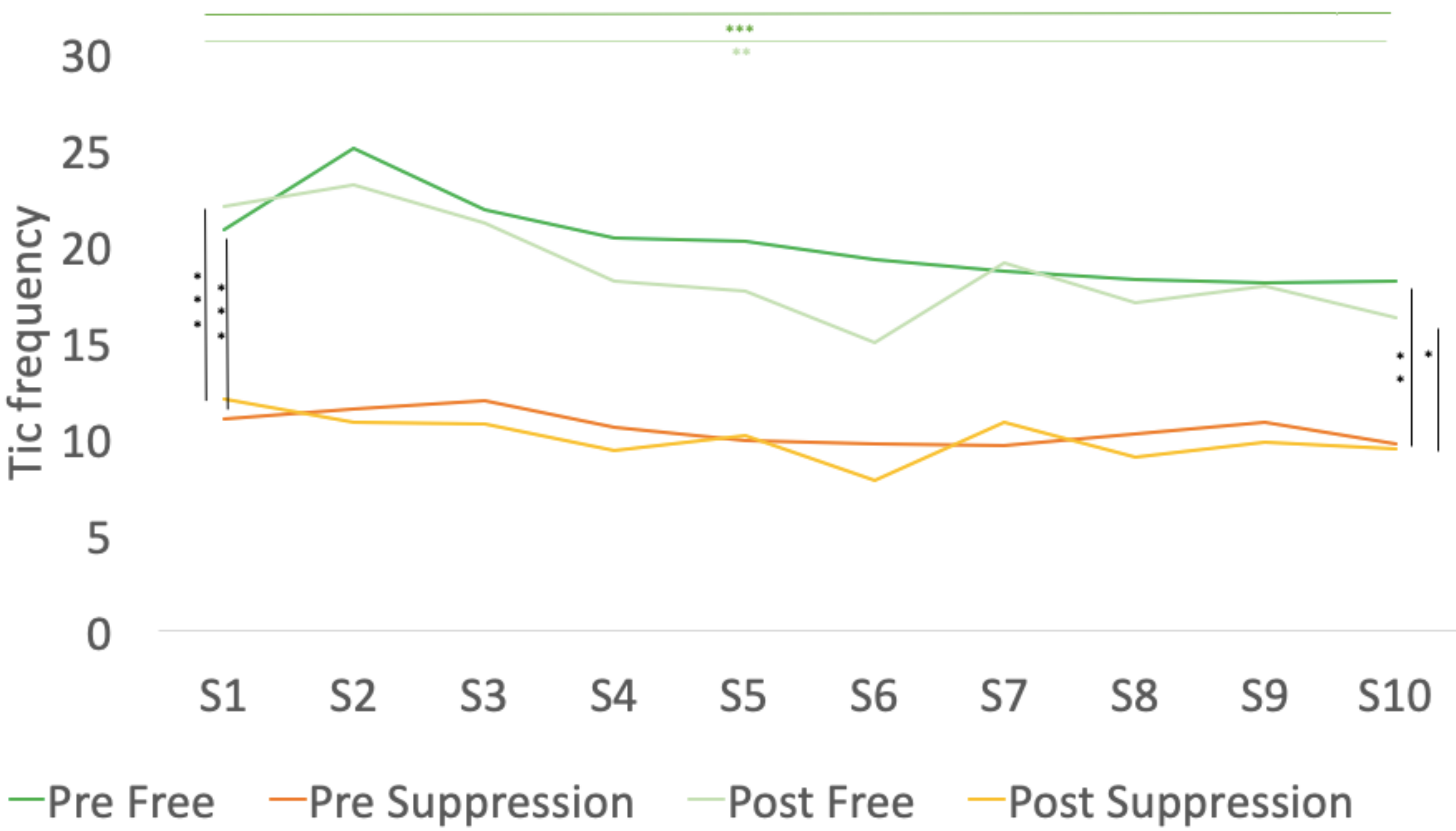


Figure 4. Tic frequency over the course of therapy

## Conclusions

Over the course of 10 therapy sessions we found a significant decrease of tic frequency and premonitory urge.

The **urge decreased** significantly over the course of therapy for the **before/after suppression condition**, while no significant change in urge were found for the free conditions.

We also found a **significant decrease** for the **tic frequency** over the course of therapy in the **free tic conditions**, while no significant changes were found for the suppression conditions.

This data suggests two therapy mechanisms: decrease of urge during suppression and a decrease in tic frequency overall. The decrease in urge might be explained due to habituation effects, while the decrease in tics could be explained by habituation to urges or increased tic suppression ability.

## References

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