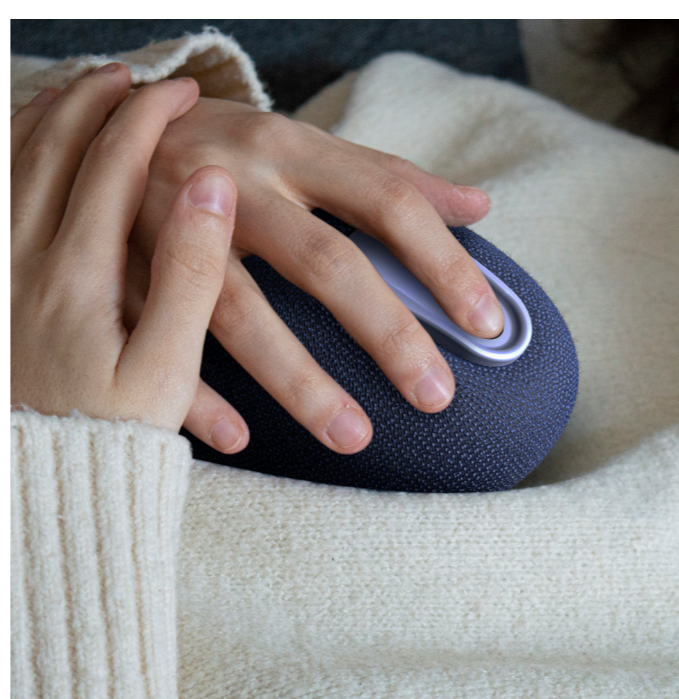


Somnox Mini was developed for Somnox as a graduation thesis (Yip, 2020). It guides its user to perform breathing exercises by expanding and contracting to mimic a breathing pattern. When the user correctly follows this breathing pattern Mini provides vibro-tactile feedback based of PPG measurements. Regular use of Mini is required to reap the benefits of breathing exercises. This thesis therefore focuses on habit formation with Mini.



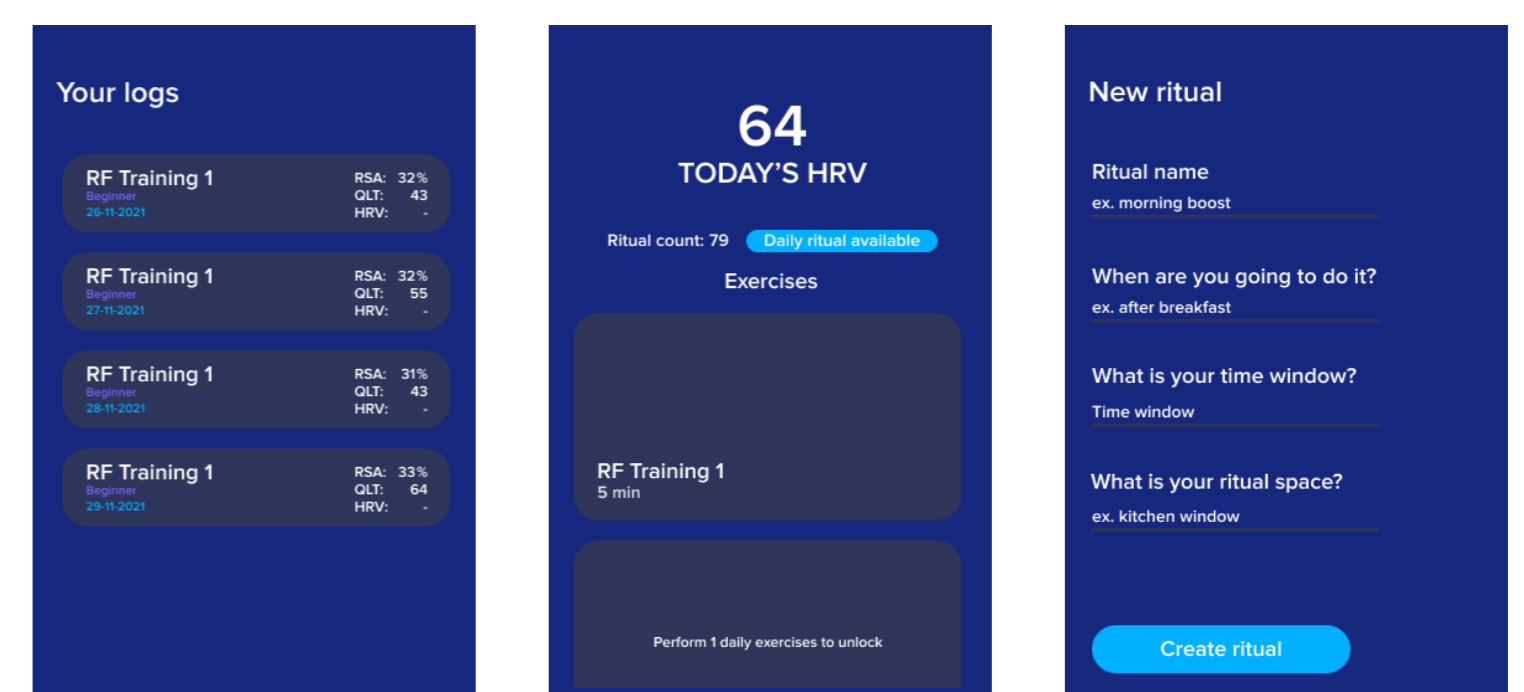
A habit is an action that is performed automatically in response to a specific contextual cue (i.e. time, location, previous activity) (Miller et al., 2019). These habits are neural pathways that strengthen through repetition. This thesis focused on the research question: **“How to design the user interaction with Mini to ultimately form a habit of performing breathing exercises?”**

Somnox Mini

Designing for habit formation of device regulated breathing exercises



Inspired by meaningful gamification (Nicholson, 2015) and implementation intentions (Gollwitzer et al., 2010) a redesigned concept for Mini's companion app was formulated. This app allowed users to track their breathing performance, select exercises from a meaningful sequence and make implementation intentions. **Functional prototypes of Mini and its companion apps were developed and tested in a longitudinal study of 10 weeks (n=8).**



Following the longitudinal study, explorative data analysis was performed on the gathered data (i.e. exercise logs and survey answers). This revealed phenomena and questions that required in depth questioning. Semi structured data informed interviews were conducted to gather information on the user experience and motivations of the participants. Thematic analysis was performed on the transcriptions of these interviews to identify points to iterate with.

Theme 1: UX/UI issues got in the way of starting a breathing exercise, ultimately getting in the way of forming a habit.

Participant 2

“I think it [feeling demotivated] was mostly due to technical issues. Those were perhaps a bit demotivating.”

Theme 2: Breathing exercises have a baseline motivation informed through the proven benefits of performing them.

Participant 3

“I know that it's still valuable. That's also why I did it when it didn't work with wi-fi. I felt like in the end, I shouldn't be doing it for you. I should be doing it for myself.”

Theme 3: Progression can be a double edged sword for affecting motivation.

Participant 3

“I started using it less so then I didn't expect it to improve. And then first, when I did expect to improve and didn't, then I guess I kind of lost my motivation.”

Theme 4: Rituals should be planned around stable contexts. If the context changes, so should the ritual until it can be consistently adhered to.

Participant 6

“At some point I moved the ritual place from my couch to my bed. I would first do the ritual then go straight to bed. When I brought it to bed I kind of stopped using it.”

Theme 5: Rituals were skipped due to tiredness, time pressure and social pressure.

Participant 10

“I guess another reason is that. When my boyfriend is here with me. Then I would also not think about doing the ritual because he's next to me.”

Theme 6: Accountability for breathing exercises is preferably kept at a minimum despite users being aware of the possible benefits.

Participant 2

“I feel like a coach would be too restricting, or perhaps too forceful. Where as an acquaintance. I think that would be fine.”

D.M. Lieu

Somnox Mini: Designing for habit formation of device regulated breathing exercises

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