Procedure

The study used the following equipment and materials:

Table Tennis Equipment: 4 table tennis paddles, an adjustable net, and 6 table tennis balls.
Table Setup: The table tennis table was simulated by combining tables that are 2.5 feet tall into one 8 feet long by 5 feet table to set the net on.
Online Reaction Time Test: The study used Human Benchmark's online time reaction click test.
Environmental Manipulation Tools: A space heater and an online sound booster extension were used to simulate loud noise levels and suboptimal room temperature.
Techniques
Technique 1: Napping in an Environmentally Controlled Room
Participants napped in an isolated room with a bed to allow for adequate nap time within the study's boundaries and with minimal outside interference.

Technique 2: Adjusting the Environment of the Room
To simulate different environmental conditions, the room's temperature was adjusted using the space heater, and a loud environment was created using the speaker. Additionally, participants were given access to cellular phones to simulate the behavioral factor of phone usage before napping. The napping environment was adjusted for every session except Day 1 (baseline testing).

Technique 3: Table Tennis Serve Accuracy Test
Participants were asked to serve 20 legal table tennis serves, both flat and slice serves. This test was conducted in every session to measure the participants' serve accuracy.

Technique 4: Time Reaction Test
The study utilized Human Benchmark's online click reaction time test to measure participants' reaction time. This test was conducted in every session.

Technique 5: Lateral Side-to-Side Agility Test
To assess participants' agility, they performed a lateral side-to-side agility test with a distance of 17 feet between the markers. This test was conducted in every session.

Technique 6: Putting It All Together
After collecting baseline metrics for serve accuracy, reaction time, and agility tests, participants napped in various environmental and behavioral conditions. After each nap, they were given 5-10 minutes to fully wake up before repeating the same tests to measure the impact of nap conditions on performance. For example, participants napped under optimal conditions (no phone usage prior to napping, an ideal room temperature between 68-74°F, and minimal noise) and then took the tests again.

After collecting all of the participant data, we analyzed them for patterns in the data and conducted significance testing.

Statistical Tests

The Friedman test was used because the study involved comparing tennis performance across multiple snap conditions for the same participants, making it a repeated-measures design. Since the Friedman test, a non-parametric alternative to repeated-measures ANOVA, does not require a sample size greater than 30, rather a sample size of 5 or more, this study was able to use it since it has a sample size of 7 (Stats Test, 2020). Furthermore, the Friedman test requires related samples and continuous data which this study does meet; all participants went under the same procedure and testing and the data collected is all quantitative (i.e. serve accuracy, how many serves were made in).

After conducting the Friedman test, to find significant differences among the various napping conditions, the Wilcoxon signed-rank test was used for post hoc analysis. This was to identify which specific pairs of groups contributed to these differences. This non-parametric test was chosen due to its suitability for comparing paired samples without assuming a normal distribution.