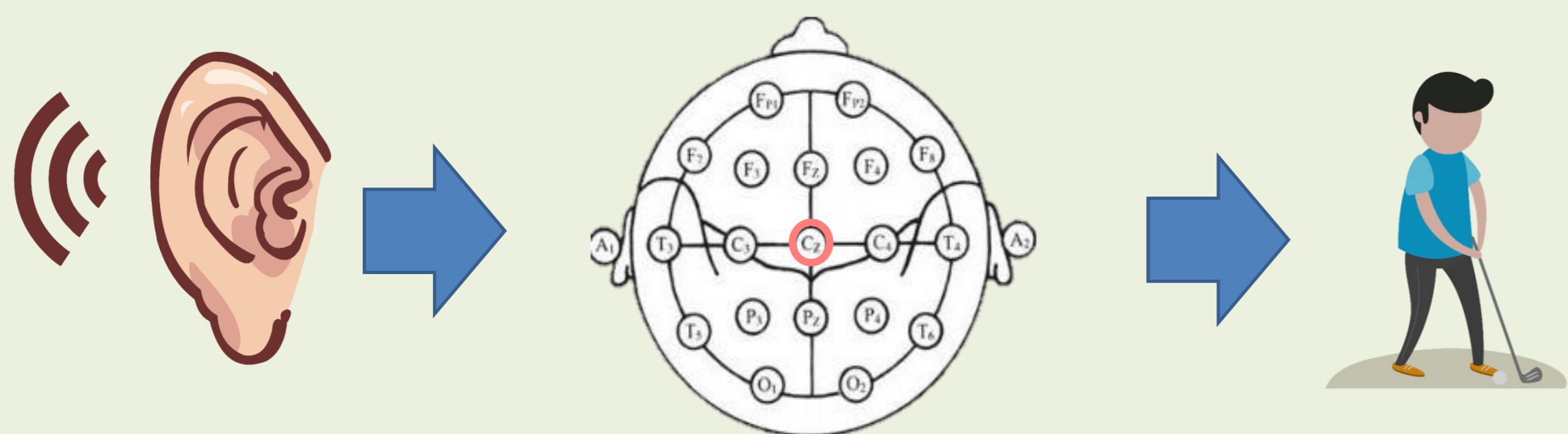


Effect of Single Session SMR Neurofeedback Training on Putting Performance of Professional Golfers-Pilot Study

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Introduction

- SMR (12-15Hz) is related to the input of somatosensory information in sensory motor area and relaxed-focus state. (Kober et al., 2013)



Neurofeedback Training (NFT) → Control brain activity → Behavior

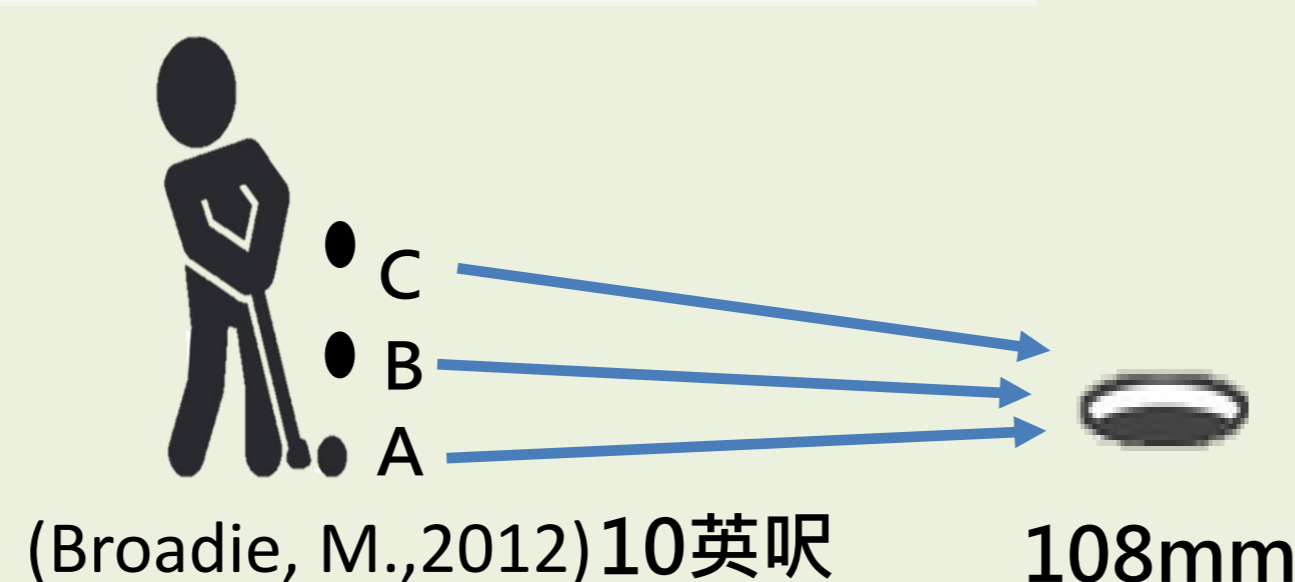
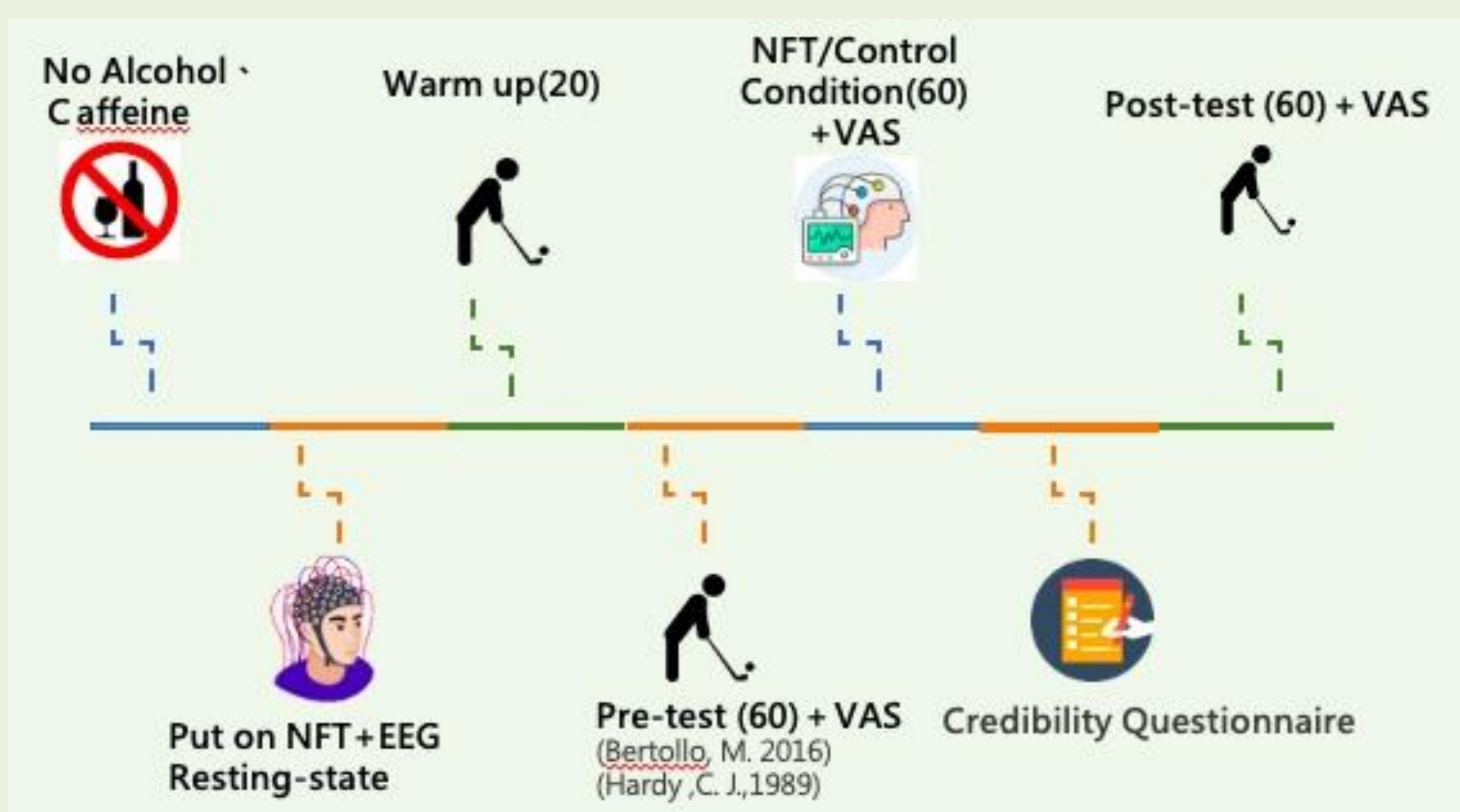
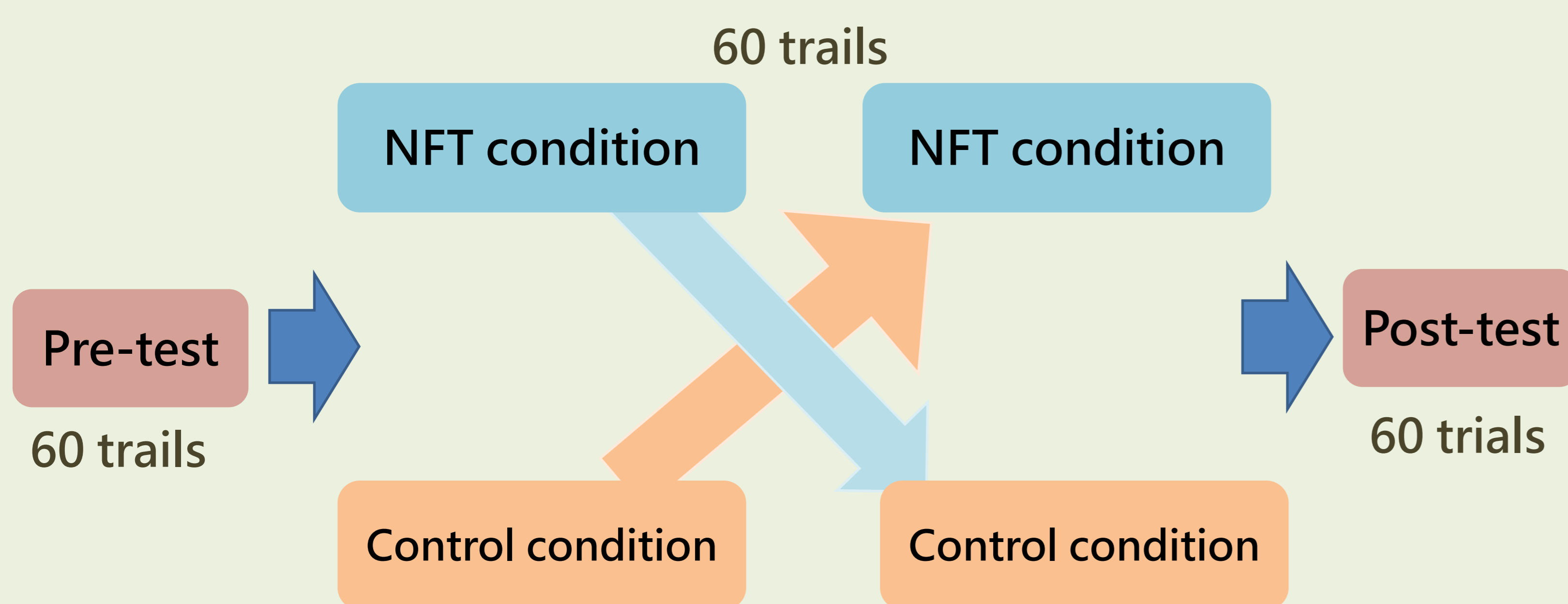
- Previous research indicated that 8 sessions of increasing Cz SMR NFT training could advance putting performance. Nevertheless, it successfully increased SMR power of preparation before putting.

Single session ~~Professional golfer~~

- Hypothesis
 1. SMR power: NFT condition > Control condition
 2. Putting performance: NFT condition > Control condition
 3. Questionnaire score:
 - Attention & Control beliefs: NFT condition < Control condition
 - Relax: NFT condition > Control condition

Method

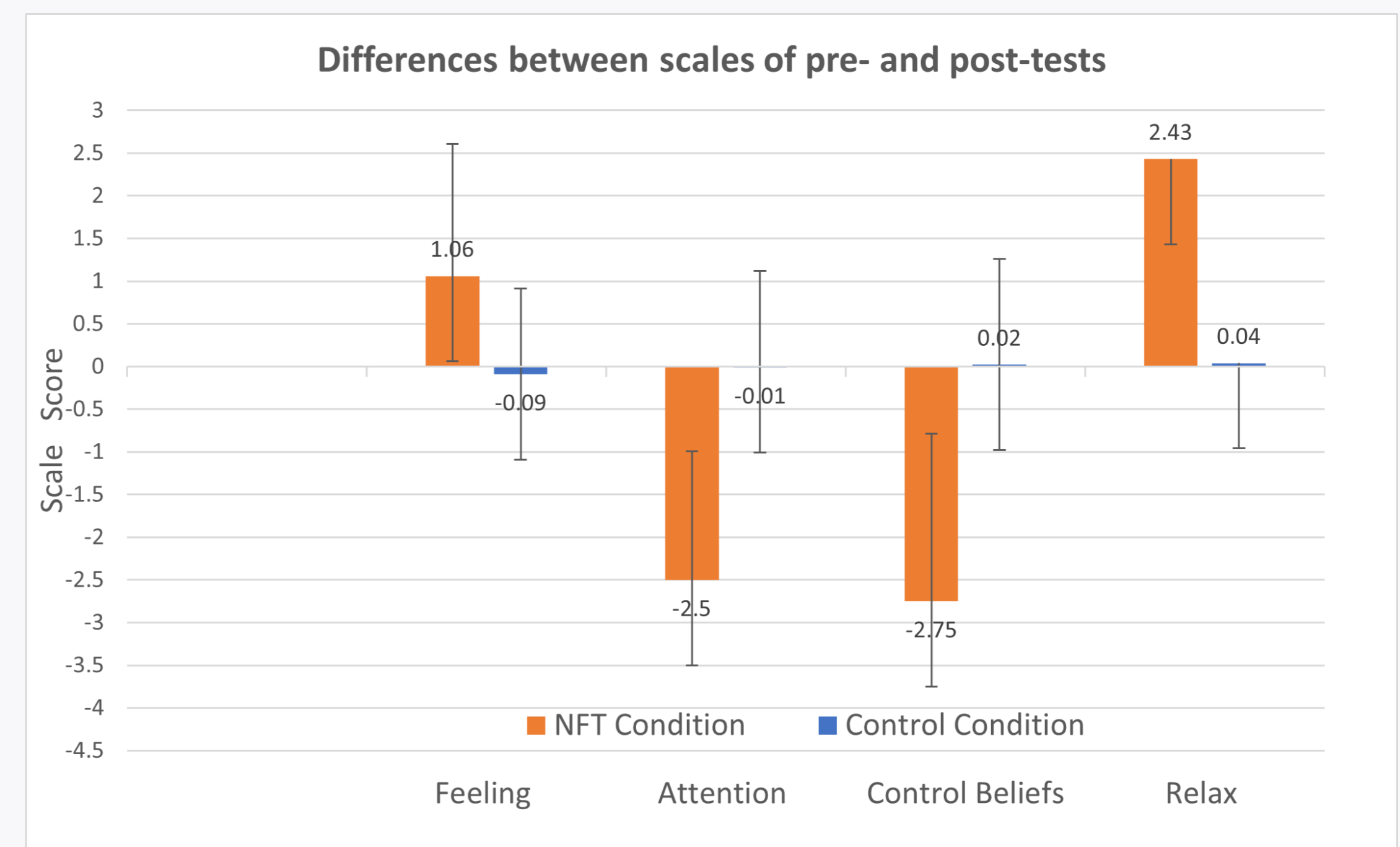
- Participants : 9 golfers with professional certification, utilize blocked randomization to crossover within-subject design .
- Procedure :



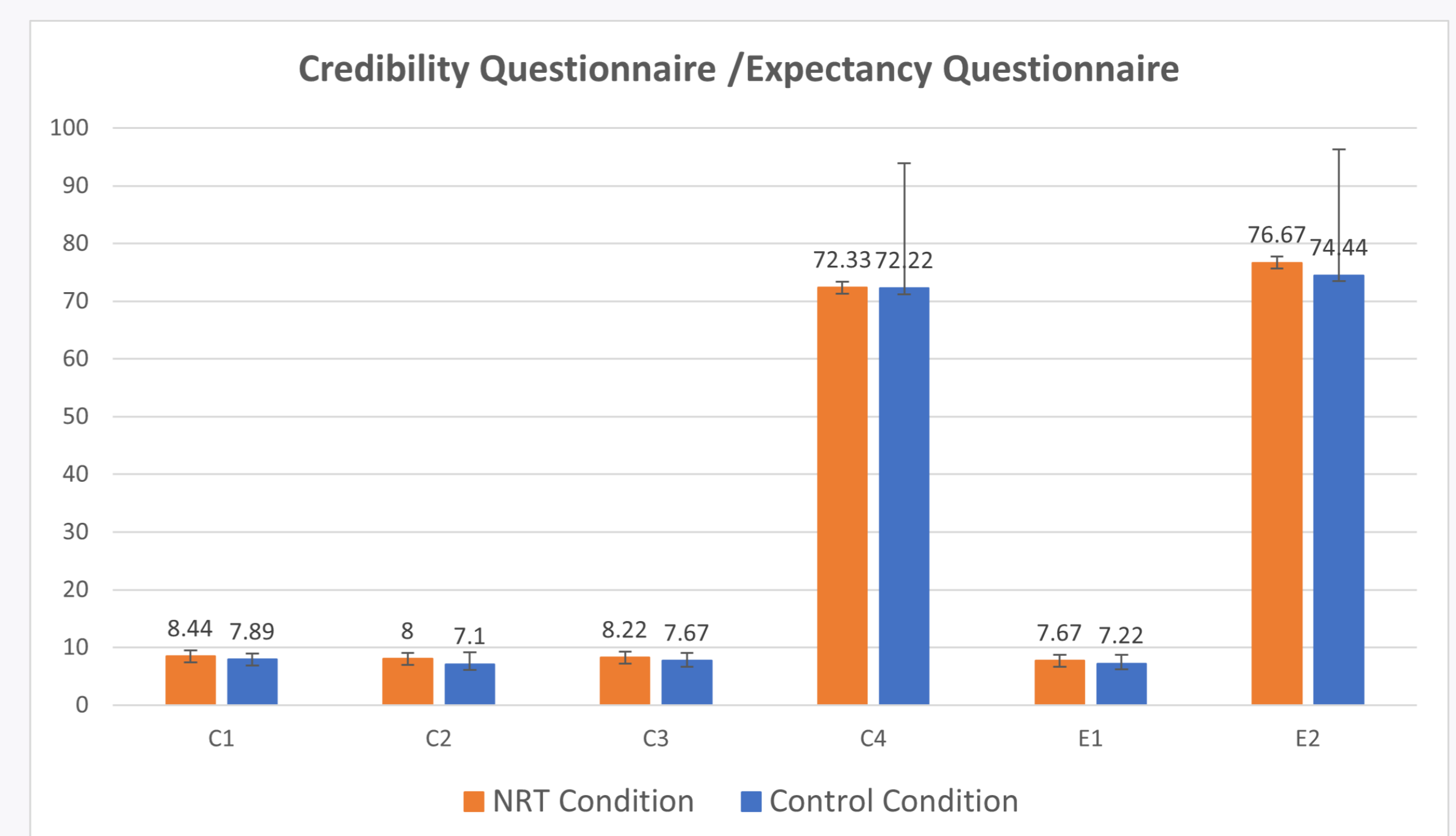
Results

NFT condition Control condition Paired t test :

- SMR power:
 - NFT condition = Control condition ($t = 2.19$, $p = .06$)
- Putting performance :
 - NFT condition = Control condition ($t = 2.23$, $p = .056$)
- Questionnaire:
 - Attention: NFT condition < Control condition ($t = -2.64$, $p = .03^*$)
 - Control beliefs: : NFT condition < Control condition ($t = -4.763$, $p = .001^*$)
 - Relax: NFT condition = Control condition ($t = 1.79$, $p = .11$)



- Manipulation Check of Expectancy/Credibility Questionnaire:
 - NFT condition = Control condition



Discussion

- Average of SMR power before putting tends to increase, which is consistent with previous research findings. (Vernon et al., 2003; Cheng et al., 2015; Xiang et al., 2018)
- Included objective (EEG) and subjective (Questionnaire) measurements
- Insufficient sample size → under power
- Recommendation :
 1. Investigate the influence on swing
 2. Retention test