

The Effect of Ego-Depletion on Decision-Making under Distraction Conditions in Skilled Female Football Players

Hatami Boroujeni, M. et al.

Extended Abstract

Aim

One component of psychological capacity is decision-making ability, which is defined as the capacity to rapidly and precisely select the desired response from a set of alternatives. Decision-making has garnered significant attention among all the elements comprising the information processing sequence. Football exemplifies an open environment characterized by perpetual change, wherein the athlete is required to execute prompt and precise judgments in order to adapt to the environment's demands. Controlling one's attention is among the most effective modes of self-control. Psychological ego depletion is a transient state that can occur in accordance with the self-control strength model, subsequent to undertaking a task that requires self-control. Several studies have affirmed that individuals are less skilled if they require self-control in the initial task (i.e. have ego depletion). Furthermore, individuals who experienced mental ego deprivation achieved inferior performance on free throws in basketball. Determining ego-depletion, attention control, and decision-making in proficient female soccer players was thus the purpose of this research.

Methodology

Utilizing a quasi-experimental design with an applied objective, this research was conducted intra-group using a pre-test-post-test methodology. The statistical population comprised proficient female footballers who competed in the premier league of Tehran province. Forty proficient female football players, with an average age of 23.09 + 2.03 years, who had at least eight years of competition experience participated in this research. The samples were arbitrarily divided into two groups—ego-depletion and non-ego-depletion—using convenience sampling. The data were collected using a personal information questionnaire, the General Health Questionnaire (GHQ), Stroop, and a decision-making tool. We depleted the self-control strength of ego-depletion group participants in two blocks of 80 trials with the prior task (Stroop inconsistent task). They completed a computer-based decision-making task involving 180 images depicting various football situations, with only one valid response per image (pass, shoot, and dribble). Throughout the decision-making task, participants were accompanied by a distractor stream through the use of headphones. The diversion comprised twenty distinct animal names that required memorization. As an evaluation of the speed and accuracy of the decision-making process, the reaction time and number of correct responses of each participant were then recorded. The participants were subsequently separated into two groups, ego-depletion and non-ego-depletion, through the completion of the Stroop task. The Stroop test determined whether the condition was ego depletion or not based on whether the color and the text were congruent. If the two were congruent, then the condition was non-ego-depletion. Amidst distractions, participants executed the decision-making task multiple times under each of these conditions. We have been keeping track of reaction time, the number of correct responses, and decision-making speed and accuracy.

Findings

The data analysis was conducted using SPSS 21 software and a mixed ANOVA with the SYNTAX command. The results showed that the ego-depletion group made decisions with significantly slower speeds and reduced accuracy ($P < 0.001$). However, the non-ego-depletion group demonstrated a statistically significant improvement in accuracy ($P = 0.003$) but a considerable decline in decision speed ($P < 0.001$). Furthermore, although there was no significant difference observed in the accuracy ($P = 0.780$) and speed ($P = 0.649$) of the pre-test, participants in the ego-depletion group demonstrated inferior decision-making accuracy ($P < 0.001$) and speed ($P < 0.001$) in the post-test.

Conclusion

The results of this research support the hypothesis that adequate self-control ability is required to maintain concentration on functional tasks and prevent interruptions while performing sports-related tasks. Maintaining focus is a critical element in achieving success in athletic endeavors. Therefore, athletes may require the capacity to disregard task-irrelevant stimuli, including external distractions, in order to concentrate on task-relevant information. Our findings in the present study demonstrate, for the first time, that adequate self-control resources are necessary for effective decision-making in high-interference and time-sensitive sports situations. However, it is important to acknowledge certain limitations. While our utilization of the Stroop task to manipulate self-control in laboratory investigations was suitable, we propose that future self-control manipulation studies incorporate simulations of other real-world tasks, such as athletic performance.

Keywords: Attention, Mental Fatigue, Self-Control, Sports Decision Making.