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Effects of Different Kinds of Combined Action Observation and Motor Imagery on Improving Golf Putting Performance and Learning

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Abstract : Motor Imagery (MI) alone or combined with action observation (AO) has been shown to enhance motor performance and skill learning. The most effective way to combine these techniques has received limited scientific scrutiny. In the present study, we examined the effects of simultaneous (i.e., observing an action whilst imagining carrying out the action concurrently), alternate (i.e., observing an action and then doing imagery related to that action consecutively) and synthesis (alternately perform action observation and imagery action and then perform observation and imagery action simultaneously) AOMI combinations on improving golf putting performance and learning. Participants, 45 university students who had no formal experience of using imagery for the study, were randomly allocated to one of four training groups: simultaneous action observation and motor imagery (S-AOMI), alternate action observation and motor imagery (A-AOMI), synthesis action observation and motor imagery (A-S-AOMI), and a control group. And it was applied 'Different Experimental Groups with Pre and Post Measured' designs. Participants underwent eighteen times of different interventions, which were happened three times a week and lasting for six weeks. We analyzed the information we received based on two-factor (group × times) mixed between and within analysis of variance to discuss the real effects on participants' golf putting performance and learning about different intervention methods of different types of combined action observation and motor imagery. After the intervention, we then used imagery questionnaire and journey to understand the condition and suggestion about different motor imagery and action observation intervention from the participants. The results revealed that the three experimental groups both are effective in putting performance and learning but not for the control group, and the A-S-AOMI group is significantly better effect than S-AOMI group on golf putting performance and learning. The results confirmed the effect of motor imagery combined with action observation on the performance and learning of golf putting. In particular, in the groups of synthesis, motor imagery, or action observation were alternately performed first and then performed motor imagery, and action observation simultaneously would have the best effectiveness.

Keywords : motor skill learning, motor imagery, action observation, simulation
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