Transfer of Training from Virtual to Real Baseball Batting

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The use of virtual environments for training perceptual-motors skills in sports continues to be a rapidly growing area. However, there is a dearth of research that has examined whether training in a sports simulation transfers to the real task. Without evaluation of transfer it will continue to be difficult for sports teams to evaluate whether a virtual environment is worth the investment and to determine which technological components are required for training success. In this study, the transfer of perceptual-motor skills trained in an adaptive baseball batting simulator to real baseball performance was investigated. The adaptive training involved performance-based adjustments of pitch speed, location and spin rate using staircase methods. Eighty participants were assigned equally to groups undertaking adaptive hitting training in the simulator (Group 1), extra sessions of batting practice in the simulator (Group 2), extra sessions of batting practice in a real batting cage (Group 3), and a control condition involving no additional training to the players' regular practice (Group 4). Training involved two 30 min sessions per week for 6 weeks. Performance in a simulated game, in a batting cage, and on a pitch recognition test were measured pre and post-training. Where available, league batting statistics from the players were also analyzed for a 5 year period following the training. For all performance measures, the adaptive simulation training group showed a significantly greater increase from pre-post training as compared to the other groups. In addition, players in this group had superior batting statistics in league play and reached higher levels of competition. Extra sessions of batting practice produced similar training benefits (as compared to the control group) whether they occurred in the simulator or a real batting cage. Training in a virtual environment can be used to improve real, on-field performance especially when designers take advantage of simulation to provide training methods (e.g., adaptive training) that do not simply recreate the real training situation.