

Journal of General Psychology Golf Study (January, 2002)

[Journal of General Psychology Golf Study](#) - Study concluded that IM Training improves golf accuracy as well as other complex motor activities. Study reinforced findings of other IM studies, and showed IM 'effect' is also applicable to adults.

Abstract

The present experiment investigated the influence of training in timing on performance accuracy in golf. During pre- and post-testing, 40 participants hit golf balls with four different clubs in a golf course simulator. The dependent measure was the distance in feet the ball ended up from the target. Between the pre- and post-test, participants in the experimental condition received 10 hours of timing training using an instrument that was designed to train participants to tap their hands and feet in synchrony with target sounds. The participants in the control condition read literature about how to improve their golf swing. The results indicated that the experimental participants significantly improved their accuracy relative to the control participants.

Training in Timing Improves Accuracy in Golf

There are at least two indications that training in timing might improve the golf swing performance. Jagacinski, Greenberg, and Liao (1997) found evidence that the age-related decline in golf performance may be explained by the differences in timing, rhythm, and tempo between young and older adults. These researchers referred to timing as those forces that are applied to the golf club during the swing. In contrast, tempo referred to the overall speed of the swing and rhythm to the cycle of speeding up and down of the swing. In this study, young and older adults were asked to swing an eight iron in order to hit a plastic ball that was placed on a rubber tee. Speed and force pattern of the club head was measured by a miniature accelerometer attached to the club head.

Based on the considerations mentioned in our literature review, the design of our study was relatively simple. First, all participants were pre-tested using accuracy as the measure of golf performance. Second, the participants were then assigned to the experimental or control conditions. The experimental group received approximately 10 hours of training using a specialized metronome (Interactive Metronome®). In contrast to other metronomes, the Interactive Metronome® trains an individual to match a variety of movements to a steady beat using auditory feedback. The control group read golf instruction literature. Third, after five weeks, both groups were post-tested using the same procedure and measure that was used in the pre-test measure. We hypothesized that training in timing would improve accuracy.

Results

Accuracy was measured by the distance in feet between the pin and the ball's final resting place. The scores were averaged over 15 trials for each club for each participant. The results of the present experiment suggest that training in timing improves accuracy in golf. Furthermore, the improvement in performance was consistent across golf clubs. In summary, these results indicate that the training in timing improved accuracy relative to a control group which did not show any improvement.

Discussion

Why does training in timing on an activity that does not mimic the golf swing enhance accuracy in this activity? One obvious answer is that the training improved the golf swing by fine tuning the timing properties (i.e., tempo and rhythm) of the golf swing. As mentioned in the introduction section of this paper, the golfing community has attached considerable importance to the notion that timing is an essential property in a successful golf swing. We specifically suggest that the

training in timing leads to changes in tempo. Thus, it is possible that training improved the tempo of the golfers in our study. In support of this notion, a survey that was completed by the experimental participants three weeks after the post-test indicated that of the 16 individuals who returned the survey, 69% reported that the tempo of their golf swings had improved.

The second possibility is that the training made the coordination between one's intention and voluntary movement more precise. As Day (1996) hypothesized, intention to act and voluntary movement are organized in a hierarchical fashion. Therefore, in our study, training in timing simply fine tuned the coordination between intention and movement. As observed by Jagacinski et al. (1997), only a few milliseconds differentiates the effective from the ineffective golf swing and therefore, it is conceivable that an adjustment of a few milliseconds may lead to a more effective golf swing.

In summary, the present experiment indicated that training in timing improved accuracy in golf. Future research will be necessary to order further delineate the phenomenon and to develop a theory that can explain how the property of timing influences this complex motor activity. However, it is important to note that this is the first experimental demonstration of the effectiveness of training in timing on a complex motor activity, and that now there is evidence to indicate that training in timing may improve one's performance in golf. We envision that an instrument such as the Interactive Metronome[®] could not only be used for overall training in timing but also to fine tune one's swing before and during competition. Finally, we agree with Cochran and Stobbs (1968) that the terminology and concepts describing the temporal properties of the golf swing are elusive even though there is nothing more obvious than the gracefulness of a well timed golf swing.