

INTRODUCTION

Anticipation skill is fundamental to successful performance in fast ball sports such as tennis. The ability to anticipate is presumed to be due to an enhanced ability to notify and process information arising from the opponent's postural orientation prior the ball racket contact (Smeeton et al. 2005).

The purpose of this study was to examine whether the anticipation skill of P.E. teacher students could be improved through on-court and video simulation training.

METHODS

- 26 (12 female and 14 male) P.E. teacher students.
- Some previous experience in racket games and a background of athletics, dance, gymnastics, skiing and playing team sports.
- Experimental groups: G1 (n=9), G2 (n=9) and a control group C (n=8).

Training

On-court

Both experimental groups participated into a 6-weeks tennis course. Training was conducted once a week (6 x 90 min) and the goals were to improve students' stroke techniques and teaching skills in tennis.

Video simulation

G1 received video simulation training in the laboratory twice a week over a 2-week time period (4 x 30 min). Each video simulation training session consisted of 20 forehand strokes.

Pre- and posttest

Before and after the training period students were tested both in laboratory and field conditions. In both tests an opponent was playing return forehand strokes into four different areas on court (left, right, front and back). Both test conditions included six practice and 30 test trials in which ball end locations were randomized. Instruction was given to react quickly and accurately.

Laboratory

Students sat 4 m from a projection screen and watched images of

simulated tennis strokes. Response was initiated by pressing a keyboard button.

Field

Students stood at the center of the base line on a tennis court. They were required to physically respond to actual tennis strokes by moving to the right direction. Students' actions were filmed from the front and the opponent from the right hand side using two video cameras (50 Hz). A DartFish-software was used to synchronize the video clips.

Difference scores (pretest-posttest) were calculated for response time (RT, ms) and accuracy (RA, %). A One-way ANOVA with Tukey's post hoc test was applied to detect differences between the groups.

RESULTS

Significant differences in the difference scores of RT were found between the groups in the laboratory ($p < .001$) and field test ($p < .01$) conditions.

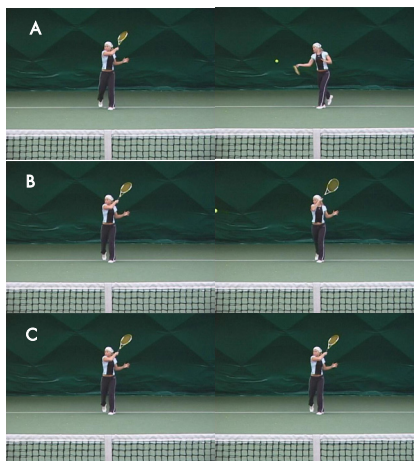


Figure 1. Schematic representations of the decision moments in the laboratory-based anticipation test before (left image) and after (right image) the training period for different groups: A = G1, B = G2 and C = C.

Tukey's post hoc test revealed in the laboratory based anticipation test a greater reduction in response time for G1 (369 ± 83 ms) compared to G2 (144 ± 76 ms) and C (32 ± 71 ms). Similarly a significant difference was found between G2 and C (table 1). In the field test G1 showed a larger

reduction in response time (354 ± 157 ms) compared to G2 (111 ± 81 ms) and C (95 ± 107 ms) (table 1).

Table 1. Means and SDs (in parantheses) of response time (ms) for all groups.

Group	Laboratory		Field	
	pre	post	pre	post
G1	329 (168)	-40 (127)	201 (71)	-153 (166)
G2	305 (171)	161 (118)	184 (153)	73 (153)
C	302 (160)	271 (207)	248 (110)	153 (152)
G1 vs. C	$p < .001$		$p < .01$	
G2 vs. C	$p < .05$		n.s	
G1 vs. G2	$p < .001$		$p < .01$	

No significant differences in response accuracy were observed between the groups (figure 2).

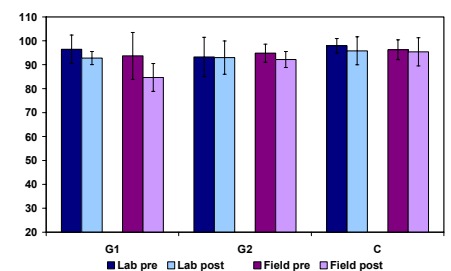


Figure 2. Means and SDs of response accuracy (%) for all groups.

CONCLUSIONS

- Both experimental G2s were able to reduce their response times in the laboratory test compared with the control group.
- Video simulation training was found to be more effective when compared with on-court training only.
- Training facilitated also on-court performance even though the field test results were less consistent than the laboratory findings.
- In summary, even fairly brief period of video simulation training can lead to meaningful improvements in response times. Students learned to extract meaningful information from the postural orientation of the opponent and thus were able to develop their anticipation skill.

REFERENCES

Smeeton, N. et al. 2005. Journal of Experimental Psychology, 11(2), 98-110.

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