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Sequencing information in tennis anticipation: friend or foe?

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The Effect of Sequencing Information on Anticipation

While historically most researchers focusing on anticipation have examined the importance of postural cue utilization, recently it has been reported that elite tennis players can use contextual information such as court positioning and shot sequencing to anticipate effectively in the absence of postural cues. However, the extent to which sequencing information affects anticipation accuracy in high- and low-skilled performers has not yet been explored in a controlled experimental setting. We examined the effect of increasing amounts of sequencing information on anticipation judgment accuracy in tennis. Three experienced tennis coaches identified rallies in which the sequence of shots played was important for anticipating the shot outcome of an opponent. We presented high- ($n = 12$) and low-skilled ($n = 12$) tennis players with 23 shots, occluded at the moment of an opponent's racket-ball contact. These clips were edited to display one, three or five shots in the preceding sequence, exposing participants to varying amounts of sequencing information prior to the same occluded shot. Sequences, which were generated from actual match rallies, were presented as animations such that instead of seeing players' bodies (and the associated postural cues) participants saw two cylinders moving around the court. High-skilled participants were significantly more accurate in making anticipation judgments compared with their less-skilled counterparts ($p < .05$). A main effect of Sequence Length was observed for directional judgments ($p < .05$). Moreover, high-skilled participants were more accurate in their directional judgments on long ($M = 76.09\%$, $SE = 2.36\%$) compared with short trials ($M = 68.12\%$, $SE = 1.64\%$) vs. ($p < .05$), whereas low-skilled participants did not differ in accuracy across conditions ($M = 67.03\%$, $SE = 3.10\%$ vs. $M = 69.20\%$, $SE = 2.08\%$; $p > .05$). Sequencing information can be used to positively inform anticipation judgments and high-skilled performers appear to be able to use this information more effectively than less-skilled performers. Findings will be discussed with reference to theory and application.