

42. Is a virtual ball projection machine a suitable training tool to use in a cricket development programme?

Cricket Batting

Sports Science (A/AS Level / Degree Yr 1/2/3) Cricket Coaching of all ages

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Introduction

Normal ball projection machines lack advance information sources presented by real-life opponents and have been shown to alter movement responses of cricket batsmen when compared to facing live bowlers. Virtual ball projection machines integrate a visual display of performance-specific cues synchronised with ball projection, but it is unclear whether this technology preserves movement responses displayed by batsmen in competitive environments.

Method

A group of right-handed elite adolescent batsmen (15.1 ± 1.1 years) completed front foot and back foot defence shots in three conditions: 1. Normal ball projection machine (NBPM); 2. Live bowlers (LB); 3. Virtual ball projection machine (VBPM). Footage was captured by a high-speed camera (100hz) system and data analysed using biomechanics software (Quintic Biomechanics v31).



(Images from <http://www.bola.co.uk/TrueMan.html>)

Results

In front foot shots, earlier spatiotemporal responses were observed between the VBPM and LB at downswing initiation, foot placement and bat-ball contact. The NBPM produced earlier movements at backswing initiation, downswing initiation, foot placement and bat-ball

contact when compared to LB. NBPM and VBPM conditions produced more extended right (back) elbow angles at ball-release compared to LB. In back foot shot, later movements were observed in the VBPM compared to LB at backswing initiation. VBPM also produced a slower peak bat speed compared to LB. NBPM and VBPM conditions produced shorter backswing durations and overall shot durations compared to LB. The NBPM produced a more extended right elbow, left elbow and left knee compared to LB at ball-release, as well as a more extended left knee at backswing initiation.

Conclusion

While the results suggest the VBPM can provide the same ecological constraints as facing a live bowler when playing front foot and back foot shots, further research is needed to investigate the effects of a longer practice period to assess its viability as an advanced batting practice task. Technological advancements are suggested to alleviate the fixed release point and provide variability in projected actions as experienced in competitive environments.

Key words

Ecological constraints; Dynamic interceptions; Skill acquisition; Representative task design; Batting



6 synchronised Quintic high-speed cameras installed in Lane 1 of the WCCC indoor school, now known as the **Quintic Performance Lane**. Quintic specialises in premier sports video analysis and the cameras, alongside access to Quintic Biomechanics v31 software, allow WCCC to comprehensively analyse 1st XI, 2nd XI, academy and emerging player programme (EPP) players.