

On the Swing of a Cricket Ball

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Abstract

The aerodynamics of the swing of a cricket ball has been investigated by experimental methods in the past, and these wind tunnel studies have indicated that a seam angle in the range 10° - 20° , and a bowling speed of about 30 ms^{-1} should produce the maximum swing of a new cricket ball (Barton, 1982 and Bentley et al., 1982). However, informal observations and approximate measurements by the authors, and inquiries made from the fast bowlers, during the games in the West Indies, indicate that the critical bowling speed – for the maximum swing of a new ball – is about 36 ms^{-1} , and the optimum seam angle for the same is close to 10° . For examining this inconsistency, wind tunnel tests were recently carried out on a non-spinning new cricket ball, and the results indicate that the maximum swing of a new cricket ball should occur at a seam angle of about 10° and at a flow speed of about 35 ms^{-1} . It is believed that Barton (1982) and Bentley et al. (1982) relatively underestimated the critical speed, probably due to the inherent limitations of the indirect method used for measuring the side force on a cricket ball. It is hoped that the experimental results, presented in this paper, would narrow the gap between the laboratory-based results and the observations in the cricket field.