In this study a method for determining elbow extension and elbow abduction for a cricket bowling delivery was developed and assessed for Jenny Gunn who has hypermobility in both elbows and whose bowling action has been repeatedly queried by umpires. Bowling is a dynamic activity which is assessed visually in real time in a cricket match by an umpire. When the legality of a bowler’s action is questioned by an umpire a quantitative analysis is undertaken using a marker based motion analysis system. This method of quantifying elbow extension should agree with a visual assessment of when the arm is “straight” and should minimise the effects of marker movement. A set of six markers on the bowling arm were used to calculate elbow angles. Differences of up to 1° for elbow extension and up to 2° for elbow abduction were found when angles calculated from the marker set for static straight arm trials were compared with measurements taken by a chartered sports physiotherapist. In addition comparison of elbow extension angles at ball release calculated from the markers during bowling trials with those measured from high speed video also showed good agreement with mean differences of 0° ± 2°.