

Trajectory of a Juggling Club

Figure 1 shows a picture of a wooden juggling club. The mass of a juggling club is not evenly distributed between about the length of the club. There is more wood present near the club head, thus shifting the **center of mass** towards the head of the club. When a club is juggled, it rotates about its center of mass as it travels through the air. The three boxes on the club indicate three positions on the club. The center box (labeled COM) is the center of mass of the club. A video of a juggled club was taken and then analyzed to produce the graph shown in **Figure 2**. The motion of the club through the air began approximately 1.8 seconds into the video. As shown on the graph, the club was released from a height of 100-cm above the ground. The horizontal and the vertical position of the three marked points are shown as a function of time. The horizontal position is the X-position and the vertical position is the Y position. The zero position for the vertical motion is the ground.

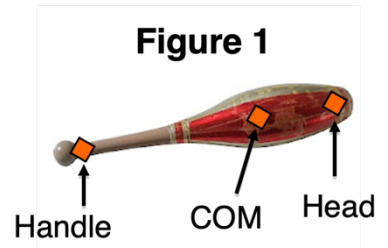


Figure 2

