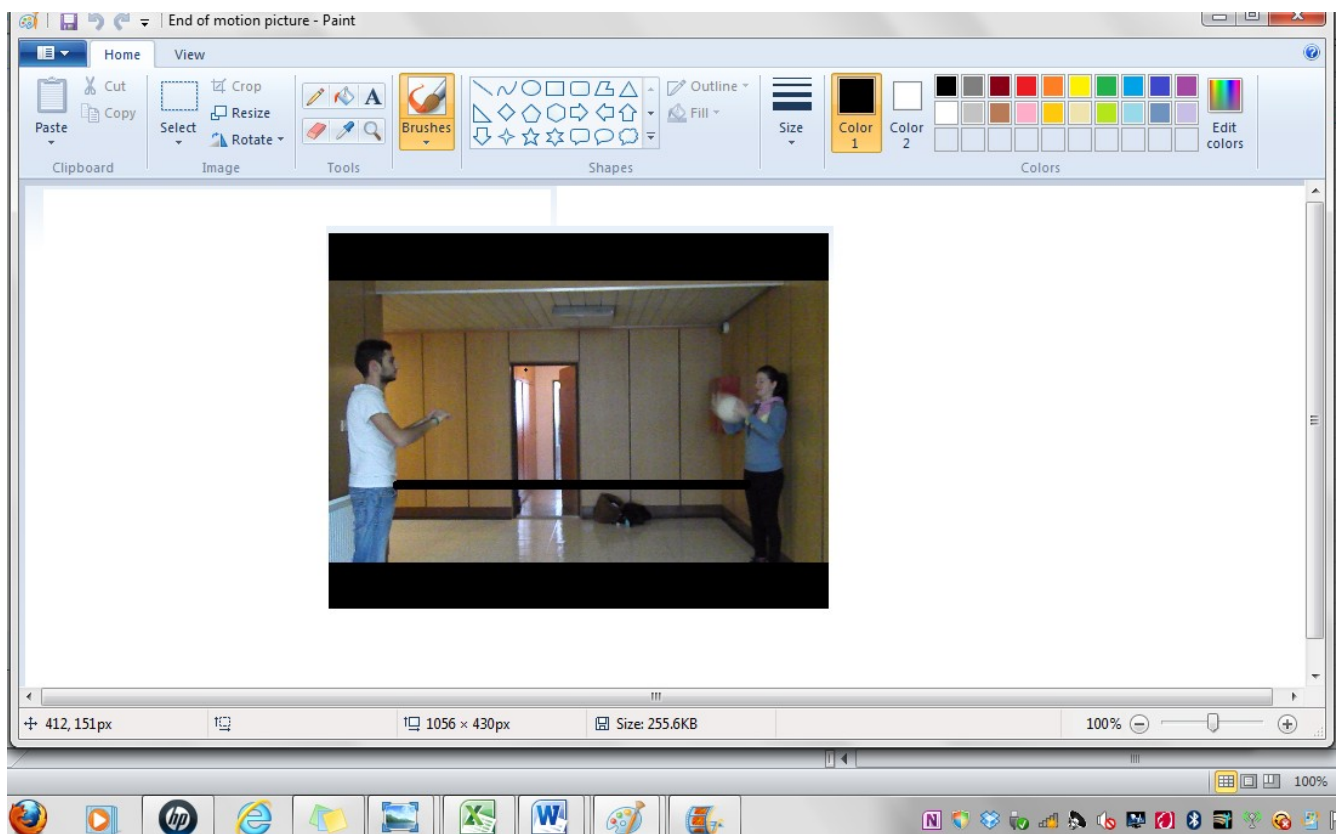# 2d and 3d Motion : Jessica Hendle

Length=3 frames

Time= 2 seconds (movement)

1. Distance= from the foot of one player to the other (3 metres/300cm)

   Distance from-hand to hand of movement

| | | distance x | y | | |
|---|---|---|---|---|---|
| 25 | | distance x | y | | |
| 26 | Point1 | 587 | 181 | | |
| 27 | Point2 | 342 | 189 | | |
| 28 | | | | | |
| 29 | | d= | 245.1 pixel | | 251.85 cm |
| 30 | | 1 pixel | 1.027397 cm | | |
| 31 | | | | | |
| 32 | | calibration | | | |
| 33 | | x | y | | |
| 34 | Point1 | 597 | 245 | | |
| 35 | Point2 | 305 | 245 | | |
| 36 | | d= | 292.0 pixlu | | 300 cm |
| 37 | | | | | |

2. To calculation the speed = distance x seconds of movement =

**time, speed**

numer of frames

3 . 1/25      **2.00** s

0.04      speed

v=s/t      0.89

3. Angles
   - Starting Stance (3 points-hand, shoulder and elbow)



| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| Q31 | | | | $f_x$ | | | | | |
| 1 | Point 1 | | | Point 3 | | | Point 1 | | |
| 2 | x1 | 619 | | x1 | 589 | | x1 | 619 | |
| 3 | y1 | 181 | | y1 | 184 | | y1 | 181 | |
| 4 | Point 2 | | | Point 2 | | | Point 3 | | |
| 5 | x2 | 617 | | x2 | 617 | | x2 | 589 | |
| 6 | y2 | 204 | | y2 | 204 | | y2 | 184 | |
| 7 | | | | | | | | | |
| 8 | size | 23.0867928 | | size | 34.4093011 | | size | 30.149627 | |
| 9 | | | | | | | | | |
| 10 | cos 2 = | 0.509 | | cos 1 = | 0.185 | | cos 3 = | 0.752 | |
| 11 | 2 = | 59.43 | | 1 = | 79.32 | | 3 = | 41.25 | |
| 12 | | | | | | | | | |
| 13 | control | | | | | | | | |
| 14 | 180.00 | | | | | | | | |
| 15 | | | | | | | | | |

- Leaving Phase of movement (hand on ball, elbow & shoulder)



| | A | B | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Point 1 | | | Point 3 | | | | Point 1 | | | |
| 2 | x1 | 360 | | x1 | 290 | | | x1 | | 360 | |
| 3 | y1 | 173 | | y1 | 176 | | | y1 | | 173 | |
| 4 | Point 2 | | | Point 2 | | | | Point 3 | | | |
| 5 | x2 | 327 | | x2 | 327 | | | x2 | | 290 | |
| 6 | y2 | 202 | | y2 | 202 | | | y2 | | 176 | |
| 7 | | | | | | | | | | | |
| 8 | size | 43.9317653 | | size | 45.2216762 | | | size | | 70.064256 | |
| 9 | | | | | | | | | | | |
| 10 | cos 2 = | -0.235 | | cos 1 = | 0.779 | | | cos 3 = | | 0.793 | |
| 11 | 2 = | 103.60 | | 1 = | 38.85 | | | 3 = | | 37.55 | |
| 12 | | | | | | | | | | | |
| 13 | control | | | | | | | | | | |
| 14 | 180.00 | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |

- Release of ball phase

|    | A | B | C | D | E | F | G | H | I |
|----|---|---|---|---|---|---|---|---|---|
| 1  | **Point 1** | | | **Point 3** | | | **Point 1** | | |
| 2  | x1 | 134 | | x1 | 42 | | x1 | 134 | |
| 3  | y1 | 132 | | y1 | 123 | | y1 | 132 | |
| 4  | **Point 2** | | | **Point 2** | | | **Point 2** | | |
| 5  | x2 | 89 | | x2 | 89 | | x2 | 42 | |
| 6  | y2 | 153 | | y2 | 153 | | y2 | 123 | |
| 7  | | | | | | | | | |
| 8  | size | 49.6588361 | | size | 55.7584074 | | size | 92.439169 | |
| 9  | | | | | | | | | |
| 10 | cos 2 = | -0.536 | | cos 1 = | 0.861 | | cos 3 = | 0.891 | |
| 11 | 2 = | 122.43 | | 1 = | 30.60 | | 3 = | 26.96 | |
| 12 | | | | | | | | | |
| 13 | control | | | | | | | | |
| 14 | 180.00 | | | | | | | | |
| 15 | | | | | | | | | |