1   I have been tasked in finding the statistical throwing speed of Jameis Winston, in comparison to the

2   throwing speed of an established NFL quarterback. My findings were in depth and found that Jameis may

3   need more time to develop his arm, therefore, should stay at Florida State one more year before entering the

4   draft. I say this because when comparing Ben Roethlisberger to Jameis Winston, there is a noticeable margin

5   between the speed and acceleration of an elite college player, and an elite NFL quarterback. The solitary

6   statistics and the average statistics both show that Jameis needs time to develop his arm if he wants to

7   compete at the most elite level in the world.

8   First, when watching Jameis Winston in his National Championship game, there were four passes that

9   stood out. These were during the final quarter, Florida State was down a touchdown, so Jameis had to really

10   show his skill at the quarterback position. The first pass was thrown 11 yards, from the 26 yard line to the 15

11   yard line. Using the conversion factor of 1 yard equals .9144 meters, we find that this was a 10.06 meter

12   pass. This pass also took .64 seconds to complete, giving it an average velocity of 10.06. This was found by

13   dividing the distance in meters by the time it took to get to the receiver in seconds. Then, using that velocity,

14   I found the acceleration of the ball to be 12.28 m/s^2. This was found using the velocity as a function of

15   position equation: $V^2=V_0^2+2a\Delta x$. Finally using the final velocity, acceleration, and time, I was able to calculate

16   the velocity of the ball as it left Jameis' hand to be 2.2 meters per second. This was calculated using the

17   equation $V=V_0+at$. The next pass was calculated using the same procedure with variables of 8.23m pass

18   completed in 1.01 seconds. The final velocity was found to be 8.15 m/s, the acceleration to be 4.04 m/s^2 and

19   the initial velocity to be 4.07m/s.   The third pass followed the same mathematical procedure using the

20   variables of a 9.14 meter pass, completed in .93 seconds. This yielded a final velocity of 9.83 meters per

21   second, an acceleration of 5.29 m/s^2, and an initial velocity of 4.91 meters per second. The final pass that I

22   noted during the BCS national championship followed the same mathematical procedure as the last three

23   passes, using the variables of 9.14 meter pass completed in .66 seconds. This yielded a final velocity of 13.85

24   meters per second, an acceleration of 10.49 m/s^2 and an initial velocity of 6.93 meters per second. I then

1   calculated what on average an NFL team can expect from Jameis Winston if they drafted him. I did this by

2   averaging all of his final/initial velocities and then averaging his accelerations. On average he initially throws

3   at 4.53 meters per second. He averages a final velocity of 11.89 m/s and an average of 8.025 m/s^2

4   acceleration.

5   When examining a notable game that Ben Roethlisberger played in Green Bay in 2009 where he

6   reached 503 passing yards, we can see that Jameis is not very comparable to an elite play extending

7   quarterback that Jameis claims he is. . The first pass was thrown 57 yards, from the own 33 yard line to the

8   opposing 10 yard line. Using the conversion factor of 1 yard equals .9144 meters, we find that this was a 52.1

9   meter pass. This pass also took 2.86 seconds to complete, giving it an average velocity of 18.21 m/s. This was

10   found by dividing the distance in meters by the time it took to get to the receiver in seconds. Then, using that

11   velocity, I found the acceleration of the ball to be 3.18 m/s^2. This was found using the velocity as a function of

12   position equation: $V^2 = V_0^2 + 2a\Delta x$. Finally using the final velocity, acceleration, and time, I was able to calculate

13   the velocity of the ball as it left Ben's hand to be 9.11 meters per second. This was calculated using the

14   equation $V = V_0 + at$. The next pass was from the own 18 yard line to the own 37 yard line, giving a distance of

15   17.37 meters. This pass took .915 seconds to complete, this pass, giving a final velocity of 19.09 meters per

16   second. Then using the same mathematical process as before, I was able to calculate the acceleration to be

17   10.49 m/s^s and the initial velocity to be 9.49 meters per second. The third notable pass in this game, Ben

18   passed from the Steelers own 44 yard line to the opposing team's 30 yard line. This pass when converted to

19   meters is 23.77m and it took 1.41 seconds to complete. This yields a velocity of 16m/s and an acceleration of

20   5.98 m/s^2. Using the information calculated thus far, this third pass had an initial velocity of 7.57 meters per

21   second. Finally, the last notable pass from this game Ben passed from his own 22 yard line to the Steeler 33

22   yard line. This was a 17 yard pass that when converted to meters, is 15.54m and was completed in 1.43

23   seconds. The velocity of this pass was 10.87 meters per second, and the acceleration was 3.8 m/s^2. The initial

24   velocity for this pass was 5.4m/s. Again, I averaged each of the three pieces of information to see what the

1 Steelers can expect from Ben Roethlisberger on any given pass. The averages of velocity, acceleration, and

2 initial velocity are the following respectively: $15.61 m/s, 5.86 m/s^2$, $7.89 m/s$.

3   If looking at the averages, it is notable that Jameis cannot throw the ball quite nearly as hard as an

4 elite quarterback like Ben Roethlisberger. The average initial velocity of the ball when leaving Jameis' hand

5 was 4.53 meters per second, whereas Ben was able to get the ball quickly away from behind the line of

6 scrimmage with an initial velocity of 7.89 m/s. The reason Jameis' average acceleration is so high, was his

7 initial and final velocities were so different, there needed to be a higher rate of change to make up the

8 difference between the two. Ben was already throwing at a high rate of speed, and thus given the ball can

9 only have a certain max velocity due to air resistance, velocity, and human limitations, it reached the max

10 speed quicker. That is the reason Jameis was able to win one of three categories between initial, final

11 velocities and acceleration. The final velocities showed that Jameis cannot throw a football nearly as hard as

12 an elite quarterback like Ben, with a difference of 3.72 m/s between Ben's average final velocity and Jameis'

13 average final velocity. In conclusion, I would not draft Jameis this year since he cannot perform at the level

14 that would be seen in quarterbacks in the National Football League.