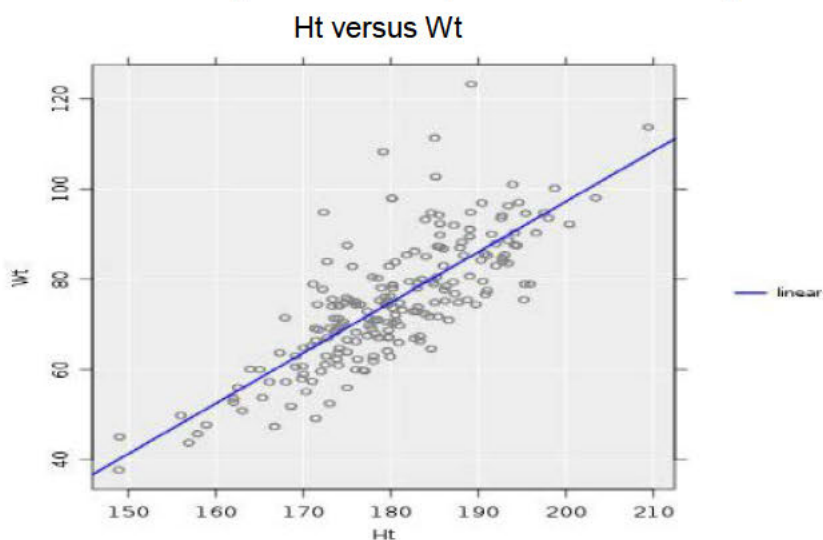I will look at the data from the Australian Sports Institute to see whether or not there is a relationship between the height (cm) and weight (kg) for sport athletes. The explanatory variable is the height while the response variable is weight. ①

Ht versus Wt

$y = 1.1171x - 126.19$ ④

②

The relationship between height and weight appears to be linear so I will fit a linear model to the data.

This data shows a strong positive relationship. This means that there is a relationship between the height of an athlete from the Australian Institute of Sport and their weight - as athletes grow taller they generally weigh more. For this data the weight is more likely to be muscle as these people are athletes and depending where the most weight is, muscle weighs more than fat.

There are a few large weights compared to their height for example 123.2 kg for someone of a height of 189.2 cm. Between around 170cm and 190cm there are a few plots higher up, this could likely be because these athletes could be very strong and the weight is muscle because of the sports they do. ③

The data values between 170cm and 190cm in the scatter plot are more scattered above the line and it maybe another model could be used is for these values such as exponential or logarithmic as these may be better fit for the data.

A possible prediction I could make would be the weight of someone that is 160cm tall. To do this I would use the equation 1.1171*160 – 126.19 = to work out this prediction. The answer for this is 52.5 (rounded to one decimal place). Therefore someone that is 160cm tall would be approximately 52.5kg. This seems reasonable as a female athlete in the data set with a height of 162cm has a weight of 52.8kg. ⑤

If I want to see how much someone would weigh that is 211cm tall by using the same equation as previously used 1.1171 *211– 126.19, my answer would be 109.5kg (rounded to one decimal place). There are only three values over 200cm on the data plot and their weights are between 92 and 114kg.