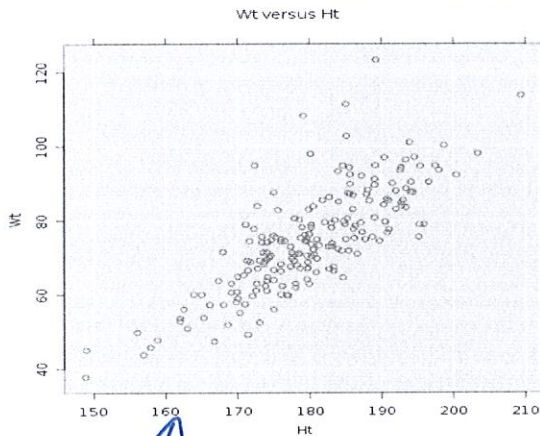


I will investigate if there is a relationship between a person's height and a person's weight for athletes from the Australian Institute of Sport as this may be useful for coaches and trainers. Height is the explanatory variable and weight is the response variable. For instance the South Australian Sport Institute's (SASI) Talent Search Program run a talent identification programme which encourages South Australians between 13 and 25 years to submit their details and some test results via a Facebook application. They don't only want people who are already good at sports – they say that a person's physical and physiological characteristics might tell them whether a person has the potential to make it in a sport that they have never have even tried before. <http://www.recsport.sa.gov.au/sasi/talent-id-development.html>

Question posed with an element of research.

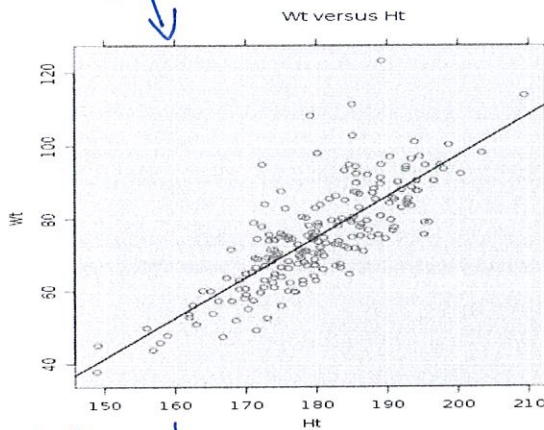
Relationship between height and weight



From looking at this graph, I can see that there is a strong positive relationship between the two variables. This means that the taller a person is in height, the heavier they are in weight.

This graph shows me that it is not very likely for an athlete to be taller than 200cm and weigh more than 190kg. The data tells me that the average height of an athlete is 180cm tall and the average weight is 75kg.

Appropriate graph



$$y = 1.1171x - 126.19$$

Equation of the line of best fit.

Gradient statement

Strength of relationship in context.

The straight line fits this data well and most of the data points are close to the line indicating a strong relationship between the height and weight of an athlete. The positive gradient means that as the height increases, so does the weight of an athlete. However, there are some data which are further away from the regression line this might mean that another model could also be used.

The equation of this data is $\text{weight} = 1.1171 * \text{height} - 126.19$

Nature of relationship in context

Features identified

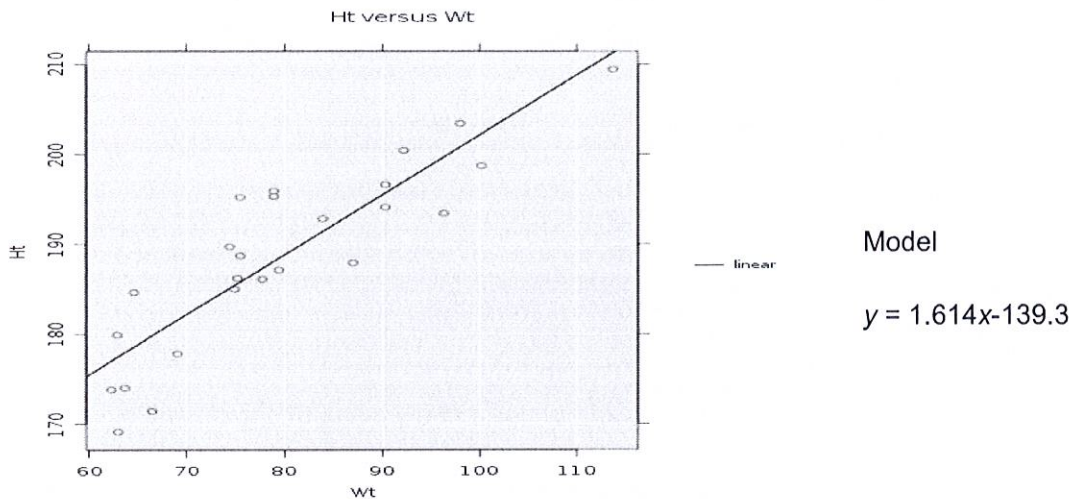
For an athlete of height 180cm my prediction for their weight would be $w = 1.1171 \cdot 180 - 126.19 = 74.888 = 74.9\text{kg}$ which seems reasonable.

For an athlete of height 200cm my prediction for their weight would be $w = 1.1171 \cdot 200 - 126.19 = 97.23 = 97.2\text{kg}$ which is a bit higher than we might expect from the data.

Looking at the data I can see that Basketball Players are at the top end for height and weight, I have decided to look at the relationship between height and weight for only Basketball players from the data set.

Prediction made

Relationship between height and weight of basketball players



Using this model for just the basketball players my predicted weight for an athlete of height 200cm would be $w = 1.614 \cdot 200 - 139.33 = 92.95 = 92.9\text{kg}$ which is closer to the actual values in the data set.

In conclusion I think there is a strong positive relationship between the height and weight of athletes – the taller an athlete is the more that they will weigh.

Conclusion answering the initial question