

2 A student investigated the effect of caffeine on human heart rate.

Three males of the same age were given cups of coffee containing caffeine. Their heart rates were measured 10 minutes after drinking the coffee.

Two hours later they were given cups of coffee with no caffeine and after 10 minutes their heart rates were measured.

The results are shown in the table.

Male	Heart rate / beats min ⁻¹	
	Coffee containing caffeine	Coffee with no caffeine
1	75	72
2	78	71
3	70	70
Mean ± sd	74 ± 4	71 ± 1

(a) The student concluded that caffeine increases human heart rate.

Analyse the data to explain why these results may not support the conclusion.

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(b) Describe how this investigation could be improved.

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(Total for Question 2 = 6 marks)