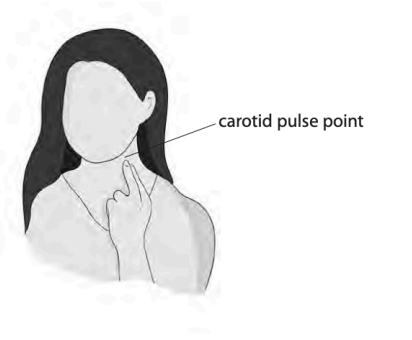
Physical activity & recovery

Q1.a(2022,4)

The effect of different types of exercise on the heart rate of an athlete was investigated.

The athlete counted the number of beats in 10 seconds at the carotid artery pulse point, as shown in Figure 7.

This measurement was used to calculate the heart rate.



(Source: © dityazemli/Shutterstock)

Figure 7

The athlete exercised for 20 minutes.

The heart rate was recorded every 5 minutes during each type of exercise.

(a) (i) State how the heart rate was calculated using this method.

(1)

.....

.....

Q1.b(2022,4)

Give **two** ways of improving the method used to obtain the data needed to calculate the heart rate.

(2)

.....

.....

.....

.....

Q1.c(2022,4)

Figure 8 shows the results of this investigation.

type of exercise	heart rate in bpm				
	0 minutes	5 minutes	10 minutes	15 minutes	20 minutes
running	90	156	168	180	180
walking	90	96	90	96	90

Figure 8

(iii) Comment on the difference in the heart rates during these types of exercise.

(3)

Q1.d(2022,4)

Exercise increases adrenalin levels.

(i) State which endocrine gland secretes adrenalin.

(1)

Q1.e(2022,4)

Explain the effect of adrenalin on liver cells during exercise.

(3)

Q1.f(2022,4)

After high intensity exercise, the pH of muscles can decrease from pH 7.0 to pH 6.3.

Explain this change in pH.

(2)