

The is because the
participant needs to
be



The study used 15 Participants (14 male, 1 female, with a mean age= 21 ± 4).

The study used a repeated measures design because the participants repeated the test twice, once before exercise and once after. Before the main study can take place all the participants are weighed and measured and this information along with their height and age are recorded.

Participants are then all instructed to practice the Bassin CAT test.

The light runs at 10mph with a two second cue delay and the objective is to stop the light when the LED flashes at number 13. Participants are allowed 5 practices at the test so that they all have the same experience of the test.

The resting heart rate of all participants is then taken using a polar heart rate monitor, this is then used to determine their target heart rate when working at 90% maximum.

This is done to ensure all participants are working at the same rate. The THR90% is calculated using the following formulae which is cited in Duncan et al., 2013 from (Karvonen, Kentala & Mustala, 1957) The formulae is:

Target Heart Rate (THR)90% = 90% of heart rate reserve
$$\text{THR}_{90\%} = \text{HR}_{\text{rest}} + 0.9(\text{HR}_{\text{max}} - \text{HR}_{\text{rest}})$$
After the target heart rate is calculated participants then start cycling on the Monark cycle ergometer at a start work rate of 175 watts this is because the participant needs to be cycling at 70 rates per minute with a resistance of 2.5kg. If after 3 minutes the participants are not at their THR90% then the resistance needs to be increased in 0.5kg intervals. After 10 minutes of high intensity exercise the Bassin CAT test is repeated and participants heart rate is also recorded.

They are then instructed to complete a 5 minute cool down period of low intensity cycling to reduce the risk of harm to the participants. Results - The qualitative results from the pre-exercise trial show that all the responses were early when anticipating the arrival time. This was the same for the post-exercise trials.

The target thresholds of all participants was calculated at a mean of 185. 97 ± 3.77 , however the average maximum recorded heart rate was 179 ± 14 . The quantitative results are shown in figure 1 below, the pre-exercise trial results ranged from 0.0136 seconds to 0.0946 seconds. This calculates at a mean of 0.

0.0511 ± 0.0221 . The post exercise results ranged from 0.018 - 0.

0.253. With a mean of 0.0675 ± 0 .

0.0566. Figure 1: Mean and SD of the time taken to react to the Bassin CAT test Discussion - After exploring the results, the study has accepted the alternative hypothesis as there was a change in high intensity exercise and the impact on coincidence anticipation reaction time. The results in fig. 1 have shown that the effect that high intensity exercise has on the body could be the possible cause as to why coincidence anticipation times have increased, making reactions slower. The figure also shows that in the post-exercise trials the margin of error is a lot larger suggesting the data set was a lot wider. A conclusion that can be drawn from this is that the exercise had possibly decreased the alertness of some participants and not others.

This could link to a number of previous research articles the first being Lyons et al., (2008) who conducted a study on novice and expert performers.

Although the group of participants being studied here were not categorised into skill level the results could explain that those who deviated a lot faster from the mean could have been performers that have experienced team sports for numerous years whereas those who take part in individual sports could have the slower times. This could be because those who take part in team sports generally have a larger sense of anticipation awareness due to the number of people that they are competing with. Another piece of research by Duncan et al., (2013) looks at intensity levels and the high intensity result found for those performing at 90% with the anticipation test at 8mp found a larger margin of error with is similar to this study.

When beginning to look at coincidence anticipation and exercise arousal also appeared as a discussion point because when exercising it is proven that arousal increases and the Kamijo et al., (2004) study supports this and the Yerkes and Dodson., 1908 inverted U arousal theory. Also in this study results can show that those who did not perform as well in the post exercise task could have been over aroused at a 90% max work rate and therefore their concentration and alertness could have decreased.

This may have also been a result of the neurones firing either too often or too little due to a mix up of neural signals because of the increases in chemical levels within the body. This would suggest that more research would need to be carried out into both arousal and intensity levels and how intensity levels alter coincidence anticipation time. This could be adapted from a current study by Duncan et al. 2013 who already explored intensity

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and found a difference in reaction times and the error that occurred due to higher intensities and a quicker reaction test.