

Results

Questionnaires (Phase 1):

A purposive sample of 11 participants (Age range= 21, Mean average=21.3, low standard deviation) were recruited for 'Phase 1' of the study (6 Male, 5 female). 'Phase 1' involved quantitative results from the participants non-parametric scale questionnaires. Questionnaires were composite, comprising standard international measures of self-esteem (Rosenberg, 1965), perceived stress (Cohen, 1994) and mood state (Brunel Mood Scale, 1992) from the different environments. Results from participants were ran through SPSS as a paired t-test to conclude the significance levels before and after exercise sessions in each environment.

Blue Environment:

Participants mean anger, tension, fatigue, confusion and depression levels decreased after a walk in the blue environment with an increase in mean vigour levels (Figure 1).

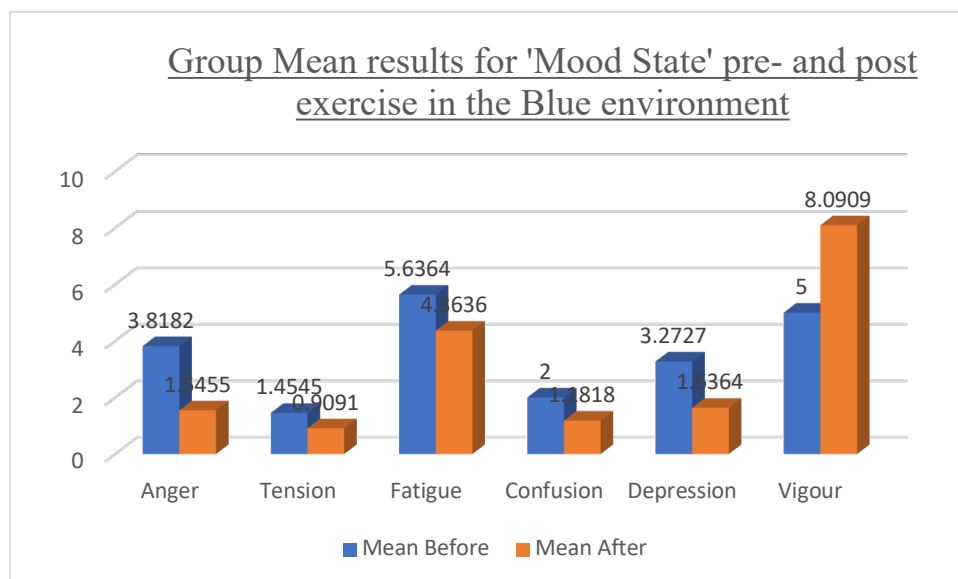


Figure 1: This graph shows participants mean results collated from the 'Brunel Mood Scale' Questionnaire after 20 minutes of exercise within the blue environment

Questionnaire data ran through SPSS yielded significant results, with participants mean anger levels significantly decreasing from 3.82 (SD=3.95) to 1.55 (SD=2.70) after 20 minutes of exercise in the blue environment. Participants mean tension levels also significantly decreased from 1.45 (SD=2.58) to 0.91 (SD=2.12), mean fatigue levels decreased from 5.64 (SD=3.98) to 4.36 (SD=4.50), mean confusion levels significantly lowered from 2 (SD=3.44) to 1.18 (SD=3.28), mean depression levels significantly lowered from 3.27 (SD=4.27) to 1.64

(SD= 2.84) and participants mean vigour levels significantly increased from 5 (SD=5) to 8.09 (SD=3.84).

After data was ran through a paired samples test, anger levels were significantly different following the blue condition ($t=2.538$, $df= 10$, $P=0.029$, 2-tailed lower). Tension levels ($t=1.107$, $df=10$, $P=0.294$, 2-tailed), fatigue levels ($t=1.198$, $df=10$, $P=0.259$, 2-tailed, confusion levels ($t=1.845$, $df=10$, $P=0.095$, 2-tailed) and depression levels ($t=1.695$, $df=10$, $P=0.121$, 2-tailed) were not significantly different following the blue condition. However, vigour levels were significantly different following the blue condition ($t=-2.675$, $df=10$, $P=0.023$, 2-tailed higher).

Data from the Perceived Stress Scale (Figure 1b) shows that participants mean stress levels significantly lowered (mean before=17.73, mean after=10.64) after exercising for 20 minutes in the blue environment.

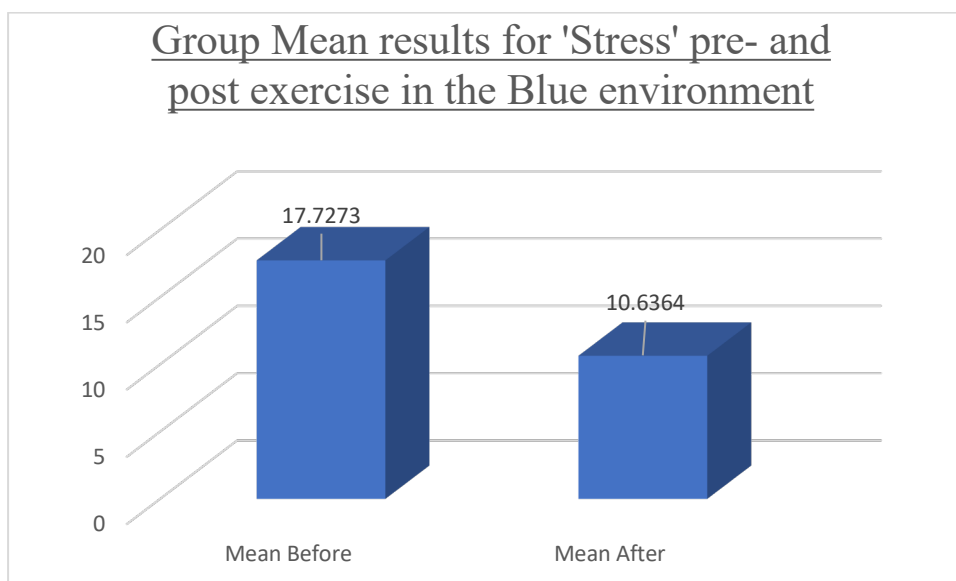


Figure 1b: This graph shows participants mean results collated from the 'Perceived Stress Scale' questionnaire after 20 minutes of exercise in the blue environment.

Participants mean self-esteem (Figure 1c) levels, from exercising in the blue environment, increased following the exercise (mean before=20.09, mean after=21.55) however the results were not significant ($P=0.251$).

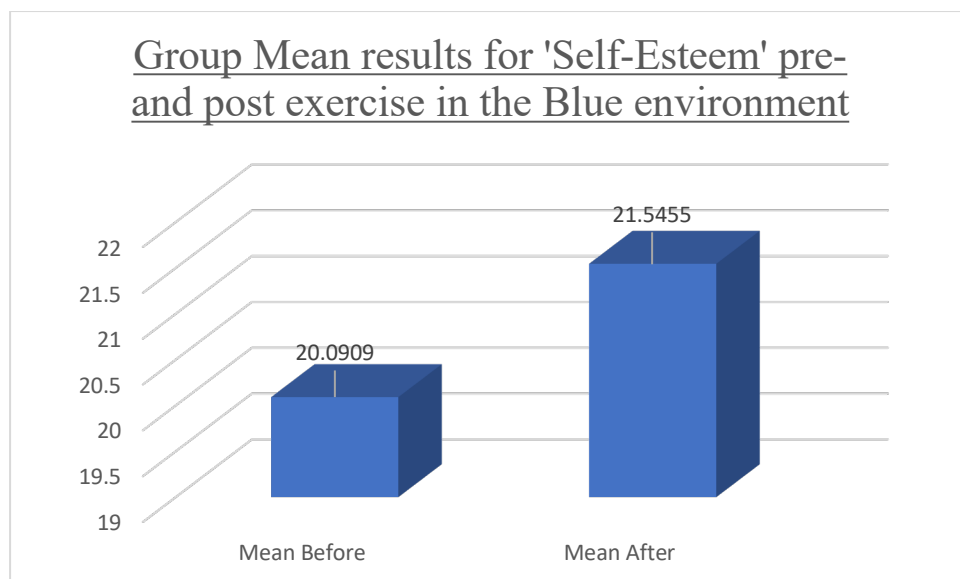


Figure 1c: This graph shows participants mean results collated from the 'Rosenberg Self-Esteem Scale' questionnaire after 20 minutes of exercise in the blue environment.

Green Environment:

Results from participants Brunel Mood Scale data (Figure 2), show that all negative mood indicators significantly lowered after 20 minutes of exercise in the green environment. Participants mean anger levels significantly decreased from 2.6364 (SD=3.58532) to 0.1818 (SD= 0.60302), mean tension levels significantly lowered from 2.5455 (SD=4.03395) to 0.4545 (SD=1.21356), mean fatigue levels significantly decreased from 7.3636 (SD= 3.26413) to 3 (SD=1.73205), mean confusion levels decreased from 1.4545 (SD=3.01210) to 0.5455 (SD=1.80907) and participants mean depression levels significantly decreased from 2.3636 (SD= 2.73030) to 0.7273 (SD=1.55505). With a significant increase in participants mean vigour levels from 4 (SD=2.48998) to 7.9091 (SD=1.81409).

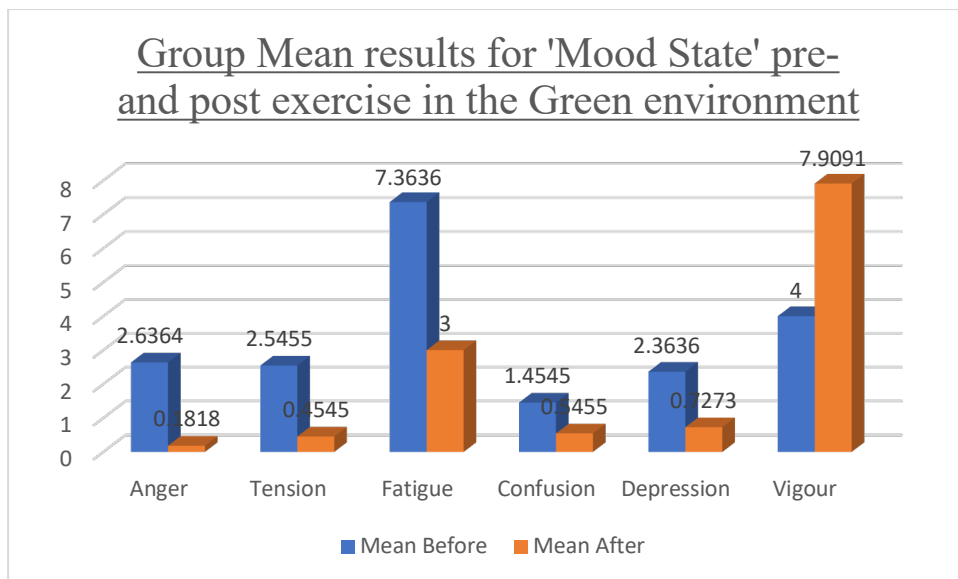


Figure 2: This graph shows participants mean results collated from the 'Brunel Mood Scale' questionnaire after 20 minutes of exercise in the green environment.

After a paired samples test, anger ($t=2.324$, $df=10$, $P=0.042$, 2-tailed lower), tension, ($t=2.352$, $df=10$, $P=0.040$, 2-tailed lower), depression ($t=3.331$, $df=10$, $P=0.008$, 2-tailed lower) and vigour levels were of a significant result following the green condition ($t=-4.737$, $df=10$, $P=0.001$, 2-tailed higher). However fatigue ($t=4.707$, $df=10$, $P=0.001$, 2-tailed) and confusion levels were not significantly different following the green condition ($t=2.085$, $df=10$, $P=0.064$, 2-tailed)

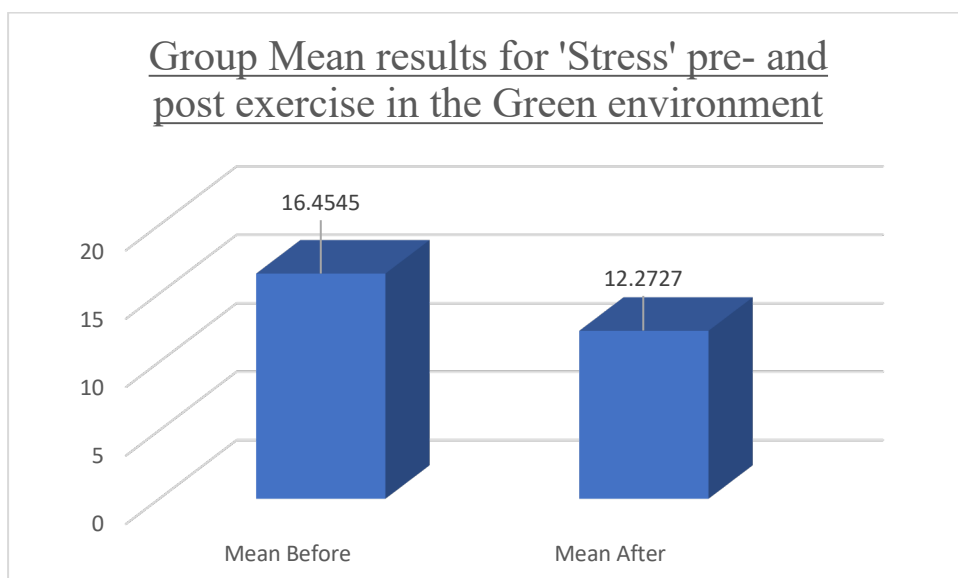


Figure 2b: This graph shows participants mean results collated from the 'Perceived Stress Scale' questionnaire after 20 minutes of exercise in the green environment.

There was a significant decrease in participants stress levels (mean before= 19.09, mean after=21.36) after 20 minutes of exercise (Figure 2b) in the green environment ($t=4.854$, $df=10$, $P=0.001$, 2-tailed), as well as a significant increase in participants self-esteem (Figure 2c) levels (mean before =16.45, mean after=12.27) following the green condition ($t=-3.023$, $df=10$, $P=0.013$, 2-tailed).

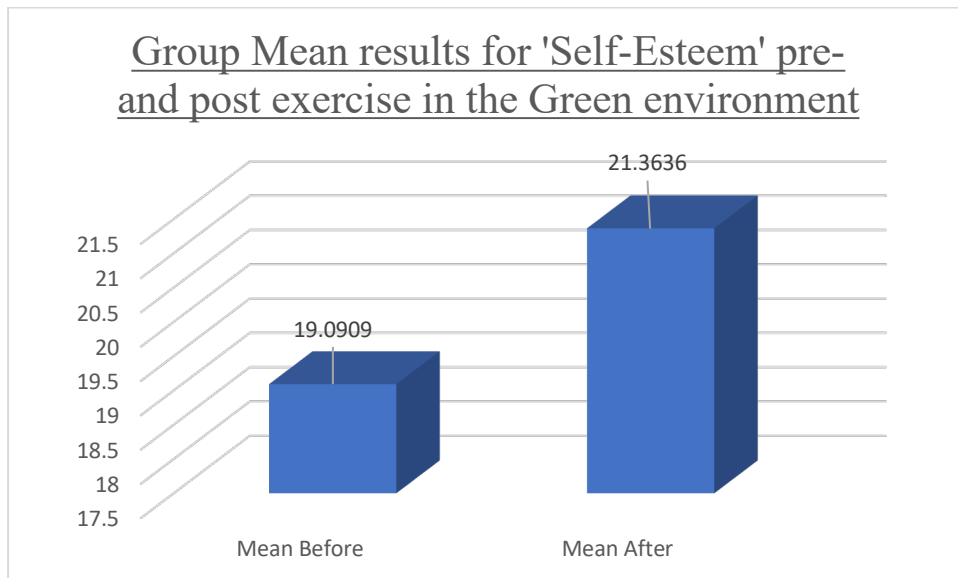


Figure 2c: This graph shows participants mean results collated from the 'Rosenberg Self-Esteem Scale' questionnaire after 20 minutes of exercise in the green environment.

Indoor Environment

With regards to participants responses to the Brunel Mood Scale questionnaire (Figure 3), participants mean anger levels significantly decreased from 2.5455 (SD=0.94738) to 1.0909 (SD=1.22103) after 20 minutes exercise on a treadmill, in an indoor gym. Participants also reported a significant decrease in mean tension levels, from 3.6364 (SD= 4.47823) to 1.5455 (SD=2.54416), mean fatigue levels, from 4.1818 (SD=3.21926) to 3.2727 (SD=3.52394), mean confusion levels from 1.6364 (SD=2.76668) to 0.4545 (SD= 1.03573) and mean depression levels from 2.4545 (SD=3.44568) to 1.8182 (SD= 2.44206). Results also show that participants mean vigour levels significantly increased from 4.8182 (SD=1.09394) to 7.3636 (SD=3.74894).

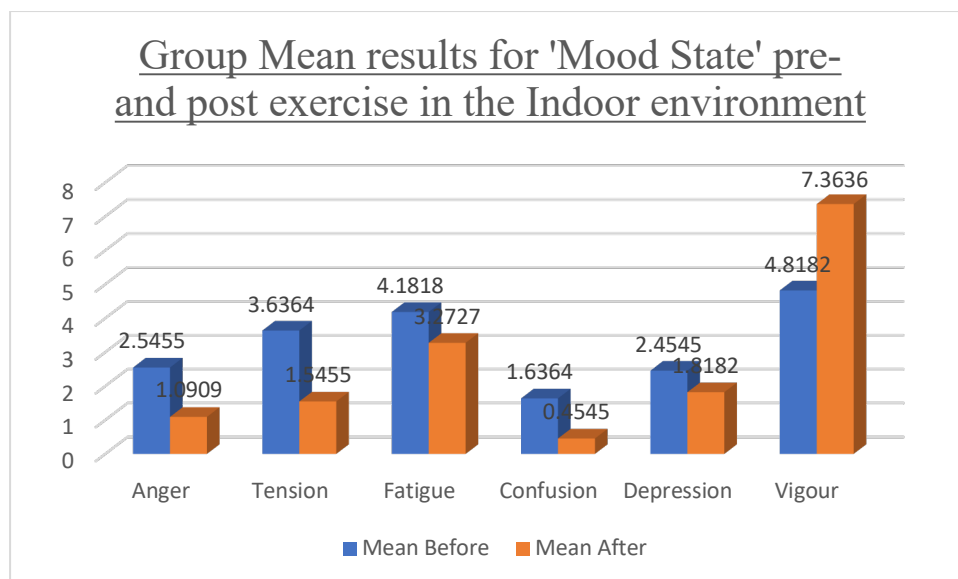


Figure 3: This graph shows participants mean results collated from the 'Brunel Mood Scale' questionnaire after 20 minutes of exercise within the indoor environment.

After the paired samples test, anger levels ($t=1.584$, $df=10$, $P=0.144$, 2-tailed), fatigue levels ($t=1.363$, $df=10$, $P=0.203$, 2-tailed), confusion levels ($t=2.137$, $df=10$, $P=0.058$, 2-tailed), depression levels ($t=0.888$, $df=10$, $P=0.396$, 2-tailed) were not significantly different following the indoor condition. However tension levels ($t=2.469$, $df=10$, $P=0.033$, 2-tailed lower) and vigour levels were significantly different following the indoor condition ($t=-2.537$, $df=10$, $P=0.030$, 2-tailed higher).

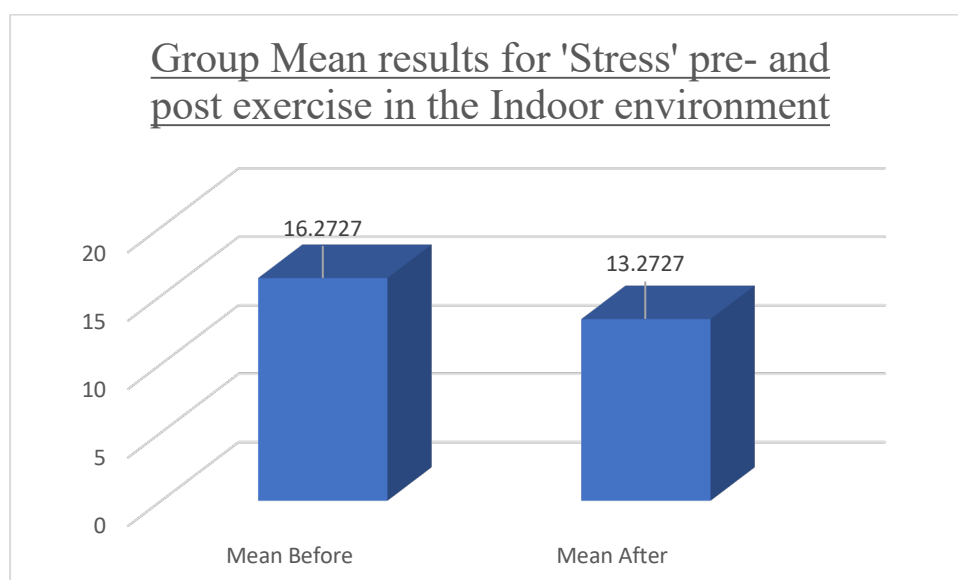


Figure 3b: This graph shows participants mean results collated from the 'Perceived Stress Scale' questionnaire after 20 minutes of exercise within the indoor environment.

20 minutes of exercise in the gym significantly lowered mean stress levels (Figure 3b) (mean before=16.27, mean after=13.27), ($t=4.975$, $df=10$, $P=0.001$, 2-tailed lower), and in terms of self-esteem (Figure 3c), there was a significant increase in participants mean levels (mean before=17.73, mean after=19.64) after exercise indoors ($t=-2.863$, $df=10$, $P=0.017$, 2-tailed higher).

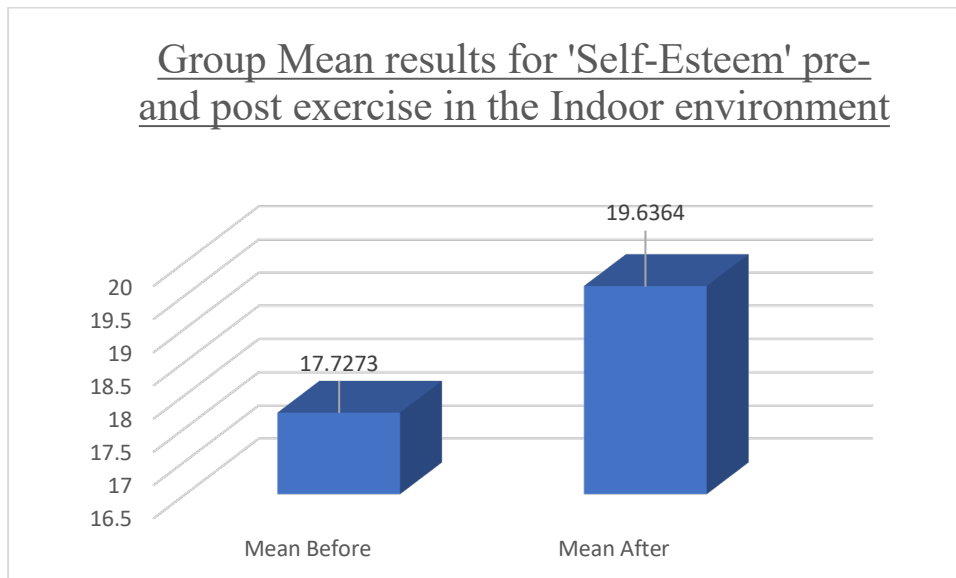


Figure 3c: This graph shows participants mean results collated from the 'Rosenberg Self-Esteem Scale' questionnaire after 20 minutes of exercise within the indoor environment.

Control Environment:

Results from participants Brunel Mood Scale data (Figure 4) show that participants mean anger levels showed no change after 20 minutes of exercise in the control condition. Participants mean vigour levels showed a significant decrease from 5.4545 (SD=4.05866) to 4.4545 (SD=3.88236). Whereas participants mean tension levels decreased from 2.8182 (SD=3.21926) to 1.9091 (SD=3.08073), mean fatigue levels decreased from 3.9091 (SD=3.47720) to 2.53341 (SD=2.53341), mean confusion levels decreased from 2.7273 (SD=3.60807) to 1.8182 (SD=2.71360) and mean depression levels decreased from 2.0909 (SD=2.87939) to 1.0909 (SD=1.92117).

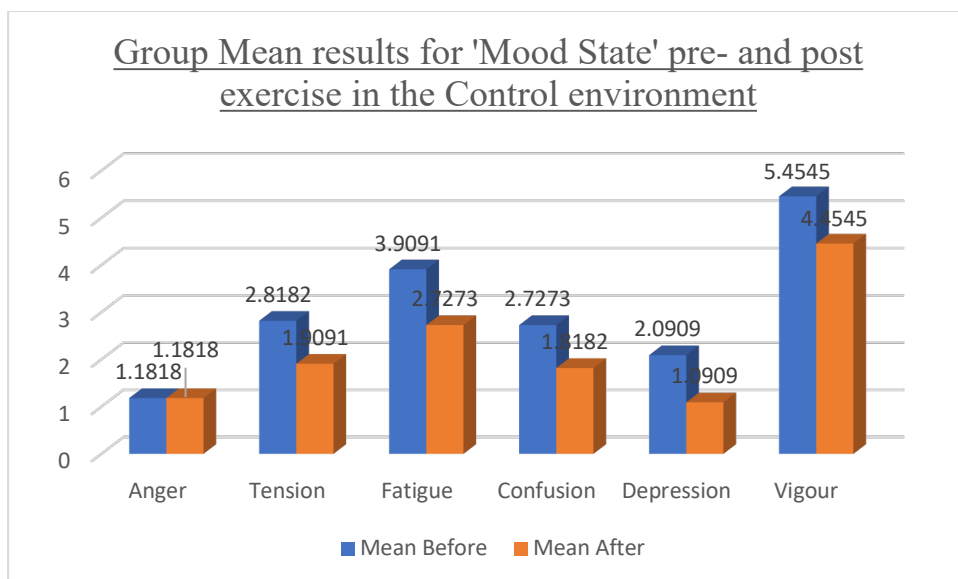


Figure 4: This graph shows participants mean results from the 'Brunel Mood Scale' questionnaire after 20 minutes in the control condition.

However after the Brunel Mood Scale data was ran through the paired samples test, anger ($t=0$, $df=10$, $P=1$, 2-tailed), tension ($t=0.23$, $df=10$, $P=0.331$, 2-tailed), fatigue ($t=1$, $df=10$, $P=0.341$, 2-tailed), confusion ($t=0.959$, $df=10$, $P=0.360$, 2-tailed) and vigour levels were not significantly different following the control condition ($t=0.862$, $df=10$, $P=0.409$, 2-tailed). Depression levels were the closest to being significant but were still over the 0.05 criterion level ($t=1.402$, $df=10$, $P=0.191$, 2-tailed).

Participants mean stress levels lowered (mean=1.27273) after 20 minutes in the control condition (Figure 4b), however after a paired sampled test, mean stress levels were not of a significant difference ($P>.05$) ($t=0.900$, $df=10$, $P=0.389$, 2-tailed).

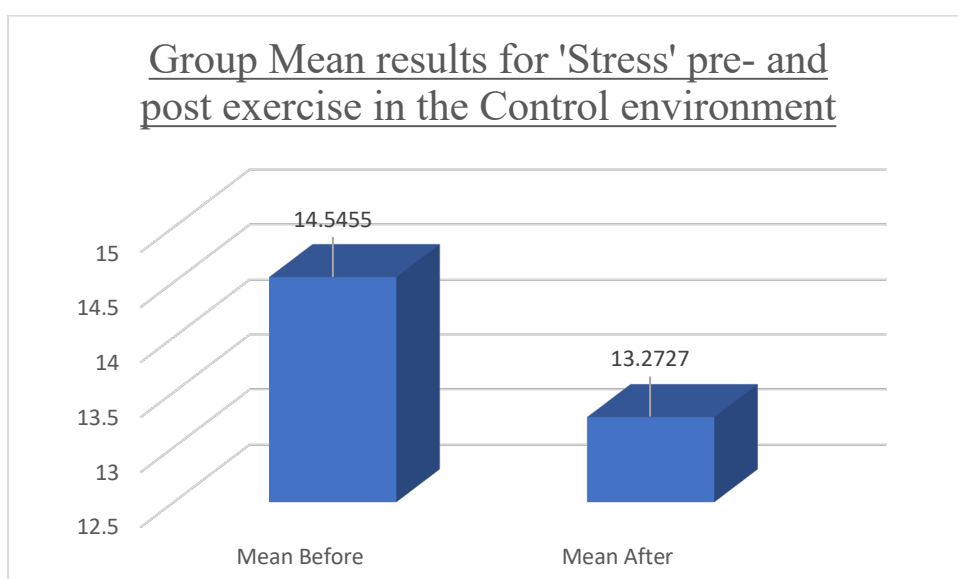


Figure 4b: This graph shows participants mean results from the 'Perceived Stress Scale' questionnaire after 20 minutes in the control environment.

Participants mean self-esteem results (Figure 4c) were significantly different after 20 minutes in the control environment ($t=-0.118$, $df=10$, $P=0.908$, 2-tailed).

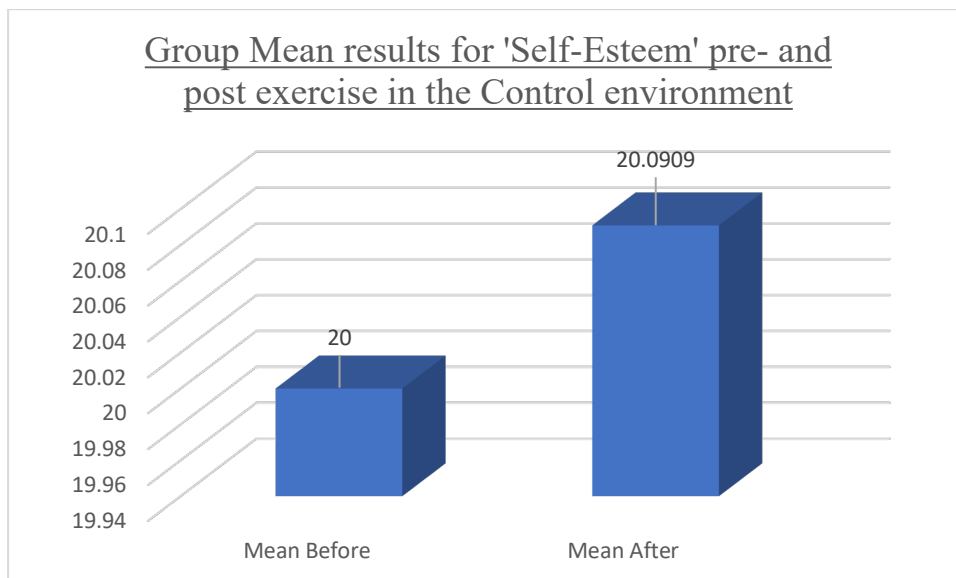


Figure 4c: This graph shows participants mean results from the 'Rosenberg Self-Esteem Scale' after 20 minutes in the control condition.

To summarise the key findings from 'Phase 1' of the study, data gathered from participant's responses to the Brunel Mood Scale questionnaire showed that the green environment had the greatest effect on participants overall mood state, with the most significant decrease in participants mean anger, tension, fatigue and an increase in mean vigour levels. The greatest significant decrease on participants mean depression levels was from exercising in the blue environment, whereas the greatest significant decrease in participants mean confusion levels was from the indoor environment. In regards to participants responses to the Rosenberg Self-esteem scale, exercising on the treadmill within the indoor environment proved most effective, with the green environment being the second most effective with regards to increasing participant's self-esteem levels. Finally, in terms of participant's responses to the Perceived Stress Scale, the blue environment had the largest significant decrease in stress, with participant's mean results from the green environment coming second. To conclude, based on participants overall results from the Brunel mood Scale, Perceived Stress Scale and Rosenberg Self-esteem scale, exercising in the green environment proved most effective in terms of participant's having a positive well-being.

Interviews (Phase 2):

Participants for the interview phase of the study were volunteers from 'Phase 1' and therefore of a convenience sample. Participants have kept their specific participant number in correlation of the first phase of the study. This section will draw upon the main themes and present the findings which arose from the interview process and subsequent thematic analysis. The key dimensions that emerged following a thematic analysis of whether exercising in different environments has any impact upon a university student's wellbeing were; enjoyment, stress reduction and motivation (Figure 5).

Dimension 1: Enjoyment

A common thread that emerged through the narratives of participants was how specific environments can influence their enjoyment of exercise. Participants stated that an aesthetically pleasing environment, such as the blue environment led to higher enjoyment. The appreciation of nice scenery can be seen through participant 1's answer to Question 6, "Where was your favourite location to exercise and why?" (Transcript ref).

My favourite location was along the river, that was just because it was a pleasant walk and nice in terms of scenery. (P1)

Exercising as a group, as opposed to alone, contributed to the enjoyment participants felt when exercising. Both participants narratives demonstrated a need for company to get the most enjoyment out of exercise.

I had lovely company as well, so yeah, I enjoyed it. (P9)

When asked how exercising as a group impacted the impacted their overall mood state, participants again referred to the positive impact of having company during the bout of exercise. It appears that for participants to enjoy exercise, their social needs must be fulfilled.

Dimension 2: Stress Reduction

Interviewees felt that the outdoor environments gave them the opportunity to reflect on themselves. Exercising in the blue environment provided participants with the opportunity to experience a range of positive emotions about themselves and provided individuals with a sense of self-confidence. Ultimately alleviating the previous feelings of stress individuals felt before exercising.

Yeah, it gave me an opportunity to think about things going on back home and there's worse things to worry about if anything I can try to put it right rather than dwell on it. (P9)

Both participants stated feeling more alert and awake after exercising in the green and blue environments. Participants also stated a change from a negative to a positive mood state after a bout of exercise in the blue environment.

The blue walk changed my mood dramatically as I was calm and relaxed whereas I was tense on campus (P9)

The present findings further suggest that being in a natural environment gave participants a sense of disassociation from their personal problems and the stresses associated with having them, which in turn enhanced their wellbeing.

Dimension 3: Motivation

Participants state that using self-made goals affected the level of motivation they put into the exercise. Recognition of using exercise for personal appearance and physical improvements were also stated, with a key theme of exercising for health reasons emerging.

I just sort of exercise sometimes for the hell of it. Obviously with the goal of getting fit (P1).

Exercise obviously helps you get the body that you want (P9)

Exercising with others was a clear sub-theme, which participant's state was crucial to a positive mind-set in exercising. When asked "Do you set yourself any goals when you exercise?". The participants response was:

I find when you're with people it motivated you more, because you have someone to push you along. (P9)

It was stated by participants that a factor which influences the type of environment they choose to exercise in is dependent on whether it is easily accessible, in terms of how close it is.

Not necessarily, just using the environment which is closest to me at the time. (P1)

The purpose of this section was to highlight the findings which emerged from the interviews regarding whether exercising in different environments has any impact upon a university

student's wellbeing. As the narratives have shown, exercise outdoors can leave participants with feelings of stress reduction, motivation and enjoyment. However as highlighted, environments need to be within close access of students due to the busy schedule of university studies. It is acknowledged that the indoor exercise condition did have a positive impact on participants in terms of stress reduction and overall mood state, however minimal compared to the effects of the outdoor environments on participants.

1875 words