

Results of Skin Apposition Techniques Study

1. Baseline data from the preliminary questionnaire and spatial ability testing for each arm of the study are included in the table below.

| | 3D stereo ON, Tracking ON | 3D stereo ON, Tracking OFF | 3D stereo OFF |
|--|---|--|---|
| n | 36 | 35 | 32 |
| Gender | Male: 11 Female: 25 | Male: 8 Female: 27 | Male: 9 Female: 23 |
| Age | Mean: 23.7 SD: 7.2 | Mean: 25.1 SD: 7.9 | Mean: 24.9 SD: 8.1 |
| Confidence in computer technology | Very confident: 8 Confident: 21 Not very confident: 6 Far from confident: 1 | Very confident: 5 Confident: 24 Not very confident: 6 Far from confident: 0 | Very confident: 10 Confident: 19 Not very confident: 2 Far from confident: 1 |
| Confidence in operating a linac | Very confident: 2 Confident: 20 Not very confident: 13 Far from confident: 1 | Very confident: 3 Confident: 24 Not very confident: 7 Far from confident: 1 | Very confident: 3 Confident: 17 Not very confident: 10 Far from confident: 2 |
| Weeks experience in electron set up participation | 0: 14 1-3: 9 4-6: 13 >6: 0 | 0: 11 1-3: 13 4-6: 9 >6: 2 | 0: 10 1-3: 9 4-6: 10 >6: 3 |
| Spatial ability score | Mean: 10.8 SD: 4.3 | Mean: 11.5 SD: 5.1 | Mean: 9.0 SD: 5.6 |

No significant differences between the 3 trial arms existed in any of the baseline characteristics.

The normalised set-up scores for the assessed appositional technique ranged from 43 to 204 with a mean of 101.8, a standard deviation on 26.3 and 95% confidence limits of 96.6 to 106.9. A Shapiro-Wilk test confirmed that data was not normally distributed.

2. The following table provides descriptive statistics for the set-up scores in each arm of the trial. A slightly higher mean performance score was noted for those students in the 3D stereo arm with user tracking turned off. However, a Kruskal-Wallis Test comparing set-up scores across the 3 groups showed no statistically significant difference ($p=0.32$).

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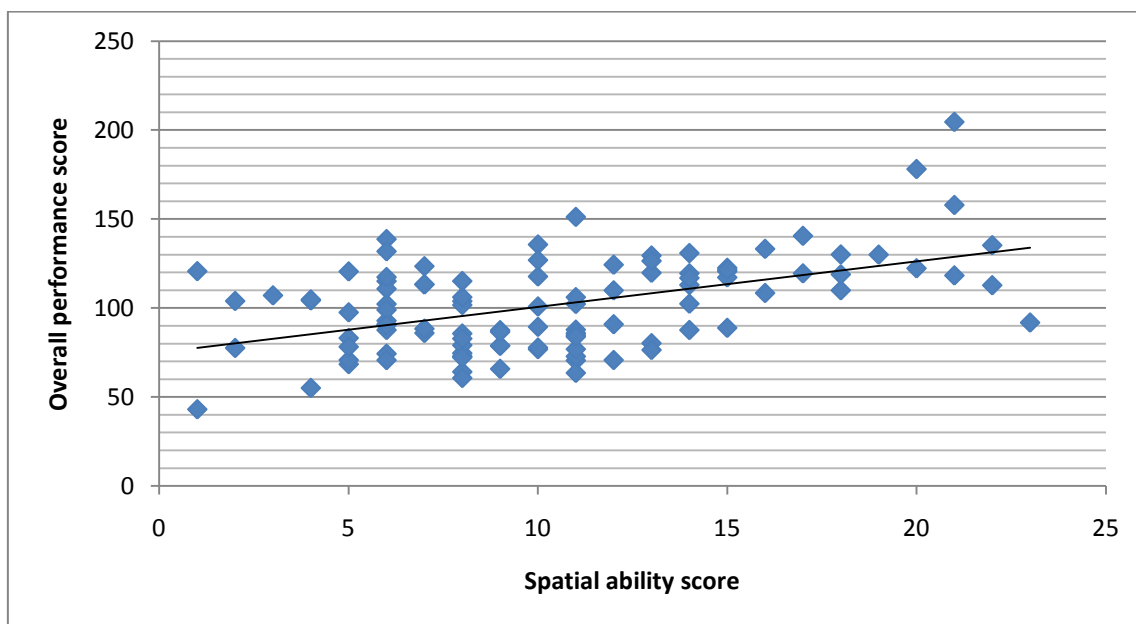
| 3D Stereo ON Tracking ON | | 3D stereo ON Tracking OFF | | 3D stereo OFF | |
|-------------------------------------|--------|--------------------------------------|--------|----------------------|--------|
| Count | 36 | Count | 35 | Count | 32 |
| Mean | 98.50 | Mean | 108.06 | Mean | 98.53 |
| Standard Error | 3.85 | Standard Error | 4.88 | Standard Error | 4.64 |
| Standard Deviation | 23.15 | Standard Deviation | 28.92 | Standard Deviation | 26.30 |
| Range | 55-151 | Range | 68-204 | Range | 43-158 |
| 95% CI | 7.83 | 95% CI | 9.94 | 95% CI | 9.48 |

The difference in the mean set up scores between the ‘3D ON, Tracking OFF’ and ‘3D ON, Tracking ON’ group was 9.56 (± 12.2 at 95%CI), $p=0.17$ (Mann-Whitney Test).

The difference in the mean set up scores between the ‘3D ON, Tracking OFF’ and ‘3D OFF’ group was 9.54 (± 13.2 at 95%CI), $p=0.22$ (Mann-Whitney Test).

No significant differences between factor scores (such as extent of skin apposition and time taken to complete set-up) across groups were identified. However those students in the Tracking ON group were significantly worse at aligning the light field to the skin marks (vector discrepancy) compared to those with user tracking turned OFF ($p<0.002$). Students attributed this to difficulty in being able to position themselves closely enough to the patient in order to visualise alignment accurately.

3. A moderately positive correlation between spatial ability and set-up score was identified: $r=0.494$, $p<0.01$.



Relationship between spatial ability and performance score