# Supplementary full statistical reports

| **ANCOVA – Dependent variable: Artificial arm absolute errors**  |
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| **Factors**  | **SS** | **df**  | **MS** | **F**  | **p**  |
| Group – Fixed factor  |  | 0.719  |  | 2  |  | 0.360  |  | 12.117  |  | < .001  |  |
| Artificial arm side – Fixed factor  |  | 0.033  |  | 1  |  | 0.033  |  | 1.119  |  | 0.296  |  |
| Intact-arm absolute errors - Covariate |  | 0.835  |  | 1  |  | 0.835  |  | 28.127  |  | < .001  |  |
| Group ✻ Artificial arm side interaction |  | 0.013  |  | 2  |  | 0.006  |  | 0.216  |  | 0.807  |  |
| Residuals  |  | 1.306  |  | 44  |  | 0.030  |  |  |  |   |  |
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*Supplementary File 1a.* ***Main analysis while controlling for artificial arm/nondominant-arm side.*** Results of a follow-up ANCOVA analysis showing no effects of artificial arm side (L vs R) on artificial arm reaching errors. Our main finding of a significant group effect was also unaffected by accounting for the side of the arm making the reaches.

| **ANCOVA – Dependent variable: Artificial arm absolute errors**  |
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| **Factors**  | **SS** | **df**  | **MS** | **F**  | **p**  |
| Group – Fixed factor  |  | 0.137  |  | 1  |  | 0.137  |  | 5.065  |  | 0.032  |  |
| Residual-limb length- Covariate |  | 0.042  |  | 1  |  | 0.042  |  | 1.565  |  | 0.221  |  |
| Intact-arm absolute errors - Covariate |  | 0.318  |  | 1  |  | 0.318  |  | 11.768  |  | 0.002  |  |
| Residuals  |  | 0.758  |  | 28  |  | 0.027  |  |  |  |   |  |
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*Supplementary File 1b.* ***Main analysis while controlling for residual-limb length.*** Results of a follow-up ANCOVA analysis showing no effects of residual-limb length on artificial arm reaching errors. Our main finding of a significant group effect was also unaffected by accounting for residual-limb length. Note that this analysis only includes artificial arm users (congenital and acquired) as controls have a complete arm and therefore no residual-limb length.

| **ANCOVA – Dependent variable: Artificial arm error noise**  |
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| **Factors**  | **SS** | **df**  | **MS** | **F**  | **p**  |
| Group – Fixed factor  |  | 1.434  |  | 2  |  | 0.717  |  | 12.405  |  | < .001  |  |
| Artificial arm bias - Covariate |  | 0.404  |  | 1  |  | 0.404  |  | 6.991  |  | 0.011  |  |
| Intact-arm noise - Covariate |  | 0.460  |  | 1  |  | 0.460  |  | 7.962  |  | 0.007  |  |
| Residuals  |  | 2.659  |  | 46  |  | 0.058  |  |  |  |   |  |
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*Supplementary File 1c.* ***Comparing artificial arm error noise while controlling for artificial arm bias.*** Results of a follow-up ANCOVA analysis showing that while there is a significant relationship between bias and noise, the group differences in error noise are independent of bias.

| **Repeated Measures ANOVA**  |
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| **Within Subjects Effects**  | **SS**  | **df**  | **MS**  | **F**  | **p**  | **η² p**  |
| Task  |  | 46.846  |  | 1  |  | 46.846  |  | 394.376  |  | < .001  |  | 0.898  |  |
| Task ✻ Group  |  | 0.191  |  | 2  |  | 0.095  |  | 0.802  |  | 0.455  |  | 0.034  |  |
| Residuals  |  | 5.345  |  | 45  |  | 0.119  |  |  |  |    |  |  |  |
| Hand  |  | 2.102  |  | 1  |  | 2.102  |  | 29.387  |  | < .001  |  | 0.395  |  |
| Hand ✻ group  |  | 0.199  |  | 2  |  | 0.099  |  | 1.390  |  | 0.260  |  | 0.058  |  |
| Residuals  |  | 3.218  |  | 45  |  | 0.072  |  |  |  |    |  |  |  |
| Hand ✻ Task  |  | 0.434  |  | 1  |  | 0.434  |  | 9.922  |  | 0.003  |  | 0.181  |  |
| Hand ✻ Task ✻ Group  |  | 0.455  |  | 2  |  | 0.227  |  | 5.194  |  | 0.009  |  | 0.188  |  |
| Residuals  |  | 3.218  |  | 45  |  | 0.072  |  |  |  |    |  |  |  |
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| **Between Subjects Effects**  | **SS**  | **df**  | **MS**  | **F**  | **p**  | **η² p**  |
| Group  |  | 0.728 |  | 2 |  | 0.364 |  | 2.911 |  | 0.065 |  | 0.115 |  |
| Residuals  |  | 5.631 |  | 45 |  | 0.125 |  |  |  |  |  |  |  |
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| Note.  Type III Sum of Squares *Supplementary File 1d.* **Analysis** **of reaching errors comparing the main task and the 2D localisation task*.*** Participants made overall larger errors in the 2D localisation task compared to the main task which included visual feedback. |

| **Repeated Measures ANOVA**  |
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| **Within Subjects Effects** | **SS**  | **df**  | **MS**  | **F**  | **p**  | **η² p**  |
| Task  |  | 6.294e +6  |  | 1  |  | 6.294e +6  |  | 56.625  |  | < .001  |  | 0.557  |  |
| Task ✻ Group  |  | 73281.726  |  | 2  |  | 36640.863  |  | 0.330  |  | 0.721  |  | 0.014  |  |
| Residuals  |  | 5.002e +6  |  | 45  |  | 111148.771  |  |  |  |    |  |  |  |
| Hand  |  | 393511.134  |  | 1  |  | 393511.134  |  | 42.156  |  | < .001  |  | 0.484  |  |
| Hand ✻ Group  |  | 57099.163  |  | 2  |  | 28549.581  |  | 3.058  |  | 0.057  |  | 0.120  |  |
| Residuals  |  | 420063.441  |  | 45  |  | 9334.743  |  |  |  |    |  |  |  |
| Hand ✻ Task  |  | 63397.897  |  | 1  |  | 63397.897  |  | 6.514  |  | 0.014  |  | 0.126  |  |
| Hand ✻ Task ✻ Group  |  | 48824.281  |  | 2  |  | 24412.140  |  | 2.508  |  | 0.093  |  | 0.100  |  |
| Residuals  |  | 420063.441  |  | 45  |  | 9334.743  |  |  |  |    |  |  |  |
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| **Between Subjects Effects**  |
| --- |
| **Cases**  | **Sum of Squares**  | **df**  | **Mean Square**  | **F**  | **p**  | **η² p**  |
| Group  |  | 319359.770  |  | 2  |  | 159679.885  |  | 0.978  |  | 0.384  |  | 0.042  |  |
| Residuals  |  | 7.349e +6  |  | 45  |  | 163305.004  |  |  |  |    |  |  |  |
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| Note.  Type III Sum of Squares  |

*Supplementary File 1e.* **Analysis** **of movement time comparing the main task and the 2D localisation task*.*** Participants took longer to move to the target in the 2D localisation task compared to the main task which included visual feedback.