# 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** | | | | | | | | | | | | | |
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| **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.