|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S46.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (DE is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 3.07433E-01 | 3.62209E-01 | 3.62209E-01 | 3.07433E-01 |
| PSO | Friedman Aligned | 1.93615E-05 | 1.93617E-05 | 1.93617E-05 | 1.93615E-05 |
| PSO | Quade | 9.96926E-01 | 1.0 | 1.0 | 9.96926E-01 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S46** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| IJAYA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S47.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (EBLSHADE is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 3.11751E-13 | 8.99281E-13 | 8.99281E-13 | 8.99281E-13 |
| DE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| DE | Quade | 3.35107E-02 | 8.46505E-02 | 8.46505E-02 | 8.14674E-02 |
| IJAYA | Friedman | 3.11751E-13 | 8.41549E-13 | 8.41549E-13 | 8.41549E-13 |
| IJAYA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| IJAYA | Quade | 3.35107E-02 | 6.27616E-02 | 6.27616E-02 | 6.09874E-02 |
| NNA | Friedman | 3.11751E-13 | 3.32179E-13 | 3.32179E-13 | 3.32179E-13 |
| NNA | Friedman Aligned | 1.48834E-09 | 4.57951E-09 | 4.57951E-09 | 4.57951E-09 |
| NNA | Quade | 3.35256E-02 | 1.16402E-01 | 1.02123E-01 | 1.10644E-01 |
| CWOA | Friedman | 3.11751E-13 | 3.11751E-13 | 3.11751E-13 | 3.11751E-13 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 3.35256E-02 | 1.04376E-01 | 9.59914E-02 | 9.96075E-02 |
| WW | Friedman | 3.11751E-13 | 3.30402E-13 | 3.30402E-13 | 3.30402E-13 |
| WW | Friedman Aligned | 2.28617E-13 | 7.91367E-13 | 7.91367E-13 | 7.91367E-13 |
| WW | Quade | 3.35256E-02 | 1.04376E-01 | 9.59914E-02 | 9.96075E-02 |
| MABC | Friedman | 3.78623E-13 | 1.39799E-12 | 1.24967E-12 | 1.39799E-12 |
| MABC | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| MABC | Quade | 3.35256E-02 | 1.16402E-01 | 1.02123E-01 | 1.10644E-01 |
| GOTLBO | Friedman | 3.78623E-13 | 1.39799E-12 | 1.22324E-12 | 1.39799E-12 |
| GOTLBO | Friedman Aligned | 4.42446E-10 | 1.63365E-09 | 1.63365E-09 | 1.63365E-09 |
| GOTLBO | Quade | 3.35256E-02 | 1.16402E-01 | 1.04050E-01 | 1.10644E-01 |
| ISCA | Friedman | 3.78623E-13 | 1.39799E-12 | 1.22324E-12 | 1.39799E-12 |
| ISCA | Friedman Aligned | 1.21214E-09 | 4.19586E-09 | 4.19586E-09 | 4.19586E-09 |
| ISCA | Quade | 3.35256E-02 | 1.16402E-01 | 1.11569E-01 | 1.10644E-01 |
| **Table S47** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| NDE | Friedman | 7.79360E-10 | 2.69779E-09 | 2.69779E-09 | 2.69779E-09 |
| NDE | Friedman Aligned | 4.65894E-12 | 1.72022E-11 | 1.72022E-11 | 1.72022E-11 |
| NDE | Quade | 5.14231E-02 | 1.59184E-01 | 1.59184E-01 | 1.49931E-01 |
| PSO | Friedman | 9.39925E-09 | 2.89208E-08 | 2.89208E-08 | 2.89208E-08 |
| PSO | Friedman Aligned | 6.99497E-11 | 2.63656E-10 | 2.63656E-10 | 2.63656E-10 |
| PSO | Quade | 4.42167E-03 | 4.43072E-03 | 4.43072E-03 | 4.42167E-03 |
| TLBO | Friedman | 1.21775E-01 | 3.12161E-01 | 3.12161E-01 | 2.80806E-01 |
| TLBO | Friedman Aligned | 2.56398E-01 | 6.65169E-01 | 6.65169E-01 | 5.28586E-01 |
| TLBO | Quade | 6.64444E-01 | 1.0 | 1.0 | 9.37458E-01 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S48.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (ADELI is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Friedman Aligned | 1.37251E-10 | 4.75100E-10 | 4.75100E-10 | 4.75100E-10 |
| PSO | Quade | 1.26537E-03 | 1.26611E-03 | 1.26611E-03 | 1.26537E-03 |
| MABC | Friedman | 1.32783E-13 | 2.45137E-13 | 2.37588E-13 | 2.45137E-13 |
| MABC | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| MABC | Quade | 1.30356E-02 | 4.64870E-02 | 4.07958E-02 | 4.55525E-02 |
| GOTLBO | Friedman | 1.32783E-13 | 2.61346E-13 | 2.37588E-13 | 2.61346E-13 |
| GOTLBO | Friedman Aligned | 3.62435E-09 | 1.33822E-08 | 1.33822E-08 | 1.33822E-08 |
| GOTLBO | Quade | 1.30356E-02 | 4.64870E-02 | 4.23263E-02 | 4.55525E-02 |
| ISCA | Friedman | 1.32783E-13 | 2.61346E-13 | 2.37588E-13 | 2.61346E-13 |
| ISCA | Friedman Aligned | 7.90632E-09 | 2.73680E-08 | 2.73680E-08 | 2.73680E-08 |
| ISCA | Quade | 1.34430E-02 | 4.66302E-02 | 4.66302E-02 | 4.57685E-02 |
| NNA | Friedman | 3.34843E-13 | 1.15907E-12 | 1.12266E-12 | 1.15907E-12 |
| NNA | Friedman Aligned | 9.12892E-09 | 2.80890E-08 | 2.80890E-08 | 2.80890E-08 |
| NNA | Quade | 1.30356E-02 | 4.64870E-02 | 4.07958E-02 | 4.55525E-02 |
| WW | Friedman | 3.34843E-13 | 1.15907E-12 | 1.12266E-12 | 1.15907E-12 |
| WW | Friedman Aligned | 1.56092E-12 | 4.80282E-12 | 4.80282E-12 | 4.80282E-12 |
| WW | Quade | 1.30356E-02 | 4.02919E-02 | 3.71360E-02 | 3.95691E-02 |
| CWOA | Friedman | 2.43957E-12 | 9.19531E-12 | 9.19531E-12 | 9.19531E-12 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 1.30356E-02 | 4.02919E-02 | 3.71360E-02 | 3.95691E-02 |
| IJAYA | Friedman | 6.38042E-12 | 2.35585E-11 | 2.26019E-11 | 2.35585E-11 |
| IJAYA | Friedman Aligned | 2.28953E-09 | 8.62977E-09 | 8.62977E-09 | 8.62977E-09 |
| IJAYA | Quade | 1.22051E-02 | 2.26497E-02 | 2.26497E-02 | 2.24160E-02 |
| **Table S48** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 6.52944E-12 | 2.35585E-11 | 2.26019E-11 | 2.35585E-11 |
| DE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| DE | Quade | 1.24297E-02 | 3.17044E-02 | 3.17044E-02 | 3.12514E-02 |
| NDE | Friedman | 1.48064E-11 | 4.55582E-11 | 4.55582E-11 | 4.55582E-11 |
| NDE | Friedman Aligned | 6.02958E-10 | 2.22631E-09 | 2.22631E-09 | 2.22631E-09 |
| NDE | Quade | 2.30164E-02 | 7.10095E-02 | 7.10095E-02 | 6.91409E-02 |
| TLBO | Friedman | 3.18582E-02 | 8.10716E-02 | 8.10716E-02 | 7.89005E-02 |
| TLBO | Friedman Aligned | 3.76448E-02 | 9.58407E-02 | 9.58407E-02 | 9.28115E-02 |
| TLBO | Quade | 4.57286E-01 | 1.0 | 9.51773E-01 | 7.88058E-01 |
| EBLSHADE | Friedman | 5.87176E-01 | 1.0 | 8.11070E-01 | 8.04727E-01 |
| EBLSHADE | Friedman Aligned | 3.79133E-01 | 7.11894E-01 | 7.11894E-01 | 5.85196E-01 |
| EBLSHADE | Quade | 7.80025E-01 | 1.0 | 9.51773E-01 | 9.38917E-01 |
| STLBO | Friedman | 8.11070E-01 | 1.0 | 8.11070E-01 | 8.11070E-01 |
| STLBO | Friedman Aligned | 9.94880E-01 | 9.94880E-01 | 9.94880E-01 | 9.94880E-01 |
| STLBO | Quade | 9.51773E-01 | 1.0 | 9.51773E-01 | 9.51773E-01 |

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| **Table S49.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (NDE is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 4.14742E-04 | 4.14821E-04 | 4.14821E-04 | 4.14742E-04 |
| PSO | Friedman Aligned | 3.02198E-08 | 5.57904E-08 | 5.57904E-08 | 5.57904E-08 |
| PSO | Quade | 8.28789E-01 | 1.0 | 1.0 | 8.28789E-01 |
| DE | Friedman | 2.83400E-01 | 5.99704E-01 | 5.81181E-01 | 4.59472E-01 |
| DE | Friedman Aligned | 5.25358E-13 | 5.25358E-13 | 5.25358E-13 | 5.25358E-13 |
| DE | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99815E-01 |
| IJAYA | Friedman | 2.83400E-01 | 5.99704E-01 | 5.81181E-01 | 4.59472E-01 |
| IJAYA | Friedman Aligned | 1.33614E-02 | 4.94618E-02 | 4.94618E-02 | 4.84535E-02 |
| IJAYA | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99403E-01 |
| CWOA | Friedman | 2.83400E-01 | 7.89202E-01 | 7.89202E-01 | 5.60486E-01 |
| CWOA | Friedman Aligned | 3.39155E-06 | 1.04356E-05 | 1.04356E-05 | 1.04355E-05 |
| CWOA | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99926E-01 |
| NNA | Friedman | 3.54469E-01 | 1.0 | 1.0 | 7.80203E-01 |
| NNA | Friedman Aligned | 1.07552E-03 | 3.72420E-03 | 3.72420E-03 | 3.71804E-03 |
| NNA | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99931E-01 |
| WW | Friedman | 3.54469E-01 | 1.0 | 1.0 | 7.80203E-01 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99926E-01 |
| MABC | Friedman | 4.01459E-01 | 1.0 | 1.0 | 8.55518E-01 |
| MABC | Friedman Aligned | 1.04059E-07 | 2.64149E-07 | 2.64149E-07 | 2.64149E-07 |
| MABC | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99931E-01 |
| GOTLBO | Friedman | 4.01459E-01 | 1.0 | 1.0 | 8.55518E-01 |
| GOTLBO | Friedman Aligned | 6.40261E-03 | 2.41687E-02 | 2.41687E-02 | 2.39198E-02 |
| GOTLBO | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99931E-01 |
| **Table S49** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| ISCA | Friedman | 4.01459E-01 | 1.0 | 1.0 | 8.55518E-01 |
| ISCA | Friedman Aligned | 1.50390E-03 | 5.55512E-03 | 5.55512E-03 | 5.54164E-03 |
| ISCA | Quade | 9.82071E-01 | 1.0 | 1.0 | 9.99931E-01 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S50.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (MABC is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 3.32214E-02 | 3.37419E-02 | 3.37419E-02 | 3.32214E-02 |
| PSO | Friedman Aligned | 5.02265E-12 | 5.02265E-12 | 5.02265E-12 | 5.02265E-12 |
| PSO | Quade | 9.77998E-01 | 1.0 | 1.0 | 9.77998E-01 |
| DE | Friedman | 9.69804E-01 | 1.0 | 1.0 | 9.98438E-01 |
| DE | Friedman Aligned | 8.55596E-02 | 1.63995E-01 | 1.63995E-01 | 1.52213E-01 |
| DE | Quade | 9.99780E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman | 9.69804E-01 | 1.0 | 1.0 | 9.98438E-01 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 9.99780E-01 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 9.69804E-01 | 1.0 | 1.0 | 9.99595E-01 |
| CWOA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Quade | 9.99780E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 9.81260E-01 | 1.0 | 1.0 | 9.99999E-01 |
| NNA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 9.81260E-01 | 1.0 | 1.0 | 9.99999E-01 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 9.99780E-01 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 9.99360E-01 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 9.99360E-01 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S50** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S51.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (TLBO is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 5.47757E-11 | 5.47757E-11 | 5.47757E-11 | 5.47757E-11 |
| PSO | Friedman Aligned | 5.78066E-11 | 2.00100E-10 | 2.00100E-10 | 2.00100E-10 |
| PSO | Quade | 2.81980E-02 | 2.85718E-02 | 2.85718E-02 | 2.81980E-02 |
| DE | Friedman | 4.02282E-10 | 7.42675E-10 | 7.42675E-10 | 7.42675E-10 |
| DE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| DE | Quade | 1.40685E-01 | 3.51358E-01 | 3.51358E-01 | 3.00292E-01 |
| IJAYA | Friedman | 4.02282E-10 | 7.97424E-10 | 7.97424E-10 | 7.97424E-10 |
| IJAYA | Friedman Aligned | 3.62409E-09 | 1.33812E-08 | 1.33812E-08 | 1.33812E-08 |
| IJAYA | Quade | 1.40685E-01 | 2.76675E-01 | 2.76675E-01 | 2.44151E-01 |
| CWOA | Friedman | 7.58384E-10 | 2.33349E-09 | 2.33349E-09 | 2.33349E-09 |
| CWOA | Friedman Aligned | 2.81525E-09 | 1.06113E-08 | 1.06113E-08 | 1.06113E-08 |
| CWOA | Quade | 1.40685E-01 | 4.12529E-01 | 3.77842E-01 | 3.43793E-01 |
| NNA | Friedman | 4.96355E-09 | 1.71815E-08 | 1.64311E-08 | 1.71815E-08 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 1.40685E-01 | 4.35460E-01 | 3.77842E-01 | 3.60942E-01 |
| WW | Friedman | 4.96355E-09 | 1.71815E-08 | 1.64311E-08 | 1.71815E-08 |
| WW | Friedman Aligned | 8.94877E-10 | 3.30416E-09 | 3.30416E-09 | 3.30416E-09 |
| WW | Quade | 1.40685E-01 | 4.12529E-01 | 3.77842E-01 | 3.43793E-01 |
| MABC | Friedman | 1.60093E-08 | 6.03426E-08 | 4.96032E-08 | 6.03426E-08 |
| MABC | Friedman Aligned | 8.61753E-09 | 2.98299E-08 | 2.55256E-08 | 2.98299E-08 |
| MABC | Quade | 1.40685E-01 | 4.35460E-01 | 3.77842E-01 | 3.60942E-01 |
| GOTLBO | Friedman | 1.60093E-08 | 6.03426E-08 | 4.96032E-08 | 6.03426E-08 |
| GOTLBO | Friedman Aligned | 8.61753E-09 | 2.98299E-08 | 2.55256E-08 | 2.98299E-08 |
| GOTLBO | Quade | 1.40685E-01 | 4.35460E-01 | 3.77842E-01 | 3.60942E-01 |
| **Table S51** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| ISCA | Friedman | 1.60093E-08 | 6.03426E-08 | 4.96032E-08 | 6.03426E-08 |
| ISCA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| ISCA | Quade | 1.40685E-01 | 4.35460E-01 | 3.87838E-01 | 3.60942E-01 |
| NDE | Friedman | 5.77124E-06 | 1.77577E-05 | 1.77577E-05 | 1.77575E-05 |
| NDE | Friedman Aligned | 4.58966E-13 | 1.41220E-12 | 1.41220E-12 | 1.41220E-12 |
| NDE | Quade | 1.58827E-01 | 4.98296E-01 | 4.98296E-01 | 4.12676E-01 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S52.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (GOTLBO is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 3.58882E-02 | 3.64967E-02 | 3.64967E-02 | 3.58882E-02 |
| PSO | Friedman Aligned | 1.81719E-08 | 1.81719E-08 | 1.81719E-08 | 1.81719E-08 |
| PSO | Quade | 9.66028E-01 | 1.0 | 1.0 | 9.66028E-01 |
| DE | Friedman | 9.74166E-01 | 1.0 | 1.0 | 9.98829E-01 |
| DE | Friedman Aligned | 1.92213E-06 | 3.54855E-06 | 3.54855E-06 | 3.54855E-06 |
| DE | Quade | 9.99387E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman | 9.74166E-01 | 1.0 | 1.0 | 9.98829E-01 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 9.99387E-01 | 1.0 | 1.0 | 9.99999E-01 |
| CWOA | Friedman | 9.74166E-01 | 1.0 | 1.0 | 9.99716E-01 |
| CWOA | Friedman Aligned | 1.53881E-01 | 5.01146E-01 | 5.01146E-01 | 4.01985E-01 |
| CWOA | Quade | 9.99387E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 9.85128E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 8.70151E-01 | 1.0 | 1.0 | 9.99147E-01 |
| NNA | Quade | 9.99387E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 9.85128E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 9.99387E-01 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S52** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 3.33973E-02 | 8.58886E-02 | 8.58886E-02 | 8.26128E-02 |
| MABC | Quade | 9.99387E-01 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 8.90777E-01 | 1.0 | 1.0 | 9.99719E-01 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S53.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (STLBO is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Friedman Aligned | 1.36951E-10 | 4.74063E-10 | 4.74063E-10 | 4.74063E-10 |
| PSO | Quade | 1.62108E-03 | 1.62229E-03 | 1.62229E-03 | 1.62108E-03 |
| MABC | Friedman | 1.02474E-13 | 1.89182E-13 | 1.77636E-13 | 1.89182E-13 |
| MABC | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| MABC | Quade | 1.57469E-02 | 5.58419E-02 | 4.90027E-02 | 5.44965E-02 |
| GOTLBO | Friedman | 1.02474E-13 | 1.89182E-13 | 1.73417E-13 | 1.89182E-13 |
| GOTLBO | Friedman Aligned | 3.57744E-09 | 1.32090E-08 | 1.32090E-08 | 1.32090E-08 |
| GOTLBO | Quade | 1.57469E-02 | 5.58419E-02 | 5.06633E-02 | 5.44965E-02 |
| ISCA | Friedman | 1.02474E-13 | 1.89182E-13 | 1.73417E-13 | 1.89182E-13 |
| ISCA | Friedman Aligned | 7.81461E-09 | 2.70506E-08 | 2.70506E-08 | 2.70506E-08 |
| ISCA | Quade | 1.60006E-02 | 5.58419E-02 | 5.55239E-02 | 5.44965E-02 |
| NNA | Friedman | 1.02474E-13 | 2.11831E-13 | 2.02505E-13 | 2.11831E-13 |
| NNA | Friedman Aligned | 9.02635E-09 | 2.77734E-08 | 2.77734E-08 | 2.77734E-08 |
| NNA | Quade | 1.57469E-02 | 5.58419E-02 | 4.90027E-02 | 5.44965E-02 |
| WW | Friedman | 1.02474E-13 | 2.11831E-13 | 2.02505E-13 | 2.11831E-13 |
| WW | Friedman Aligned | 1.49597E-12 | 4.60298E-12 | 4.60298E-12 | 4.60298E-12 |
| WW | Quade | 1.57469E-02 | 4.87185E-02 | 4.48837E-02 | 4.76642E-02 |
| CWOA | Friedman | 5.07213E-13 | 1.91180E-12 | 1.91180E-12 | 1.91180E-12 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 1.57469E-02 | 4.87185E-02 | 4.48837E-02 | 4.76642E-02 |
| IJAYA | Friedman | 1.45953E-12 | 5.38902E-12 | 5.23359E-12 | 5.38902E-12 |
| IJAYA | Friedman Aligned | 2.25780E-09 | 8.51019E-09 | 8.51019E-09 | 8.51019E-09 |
| IJAYA | Quade | 1.49333E-02 | 2.77449E-02 | 2.77449E-02 | 2.73948E-02 |
| **Table S53** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 1.51193E-12 | 5.38902E-12 | 5.23359E-12 | 5.38902E-12 |
| DE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| DE | Quade | 1.51015E-02 | 3.85593E-02 | 3.85593E-02 | 3.78906E-02 |
| NDE | Friedman | 7.43248E-11 | 2.28692E-10 | 2.28692E-10 | 2.28692E-10 |
| NDE | Friedman Aligned | 5.85711E-10 | 2.16263E-09 | 2.16263E-09 | 2.16263E-09 |
| NDE | Quade | 2.70504E-02 | 8.34946E-02 | 8.34946E-02 | 8.09165E-02 |
| TLBO | Friedman | 5.71734E-02 | 1.45785E-01 | 1.45785E-01 | 1.38816E-01 |
| TLBO | Friedman Aligned | 3.82516E-02 | 9.73902E-02 | 9.73902E-02 | 9.42628E-02 |
| TLBO | Quade | 4.94637E-01 | 1.0 | 1.0 | 8.23149E-01 |
| EBLSHADE | Friedman | 7.56821E-01 | 1.0 | 1.0 | 9.26494E-01 |
| EBLSHADE | Friedman Aligned | 3.82635E-01 | 7.18601E-01 | 7.18601E-01 | 5.89504E-01 |
| EBLSHADE | Quade | 8.24330E-01 | 1.0 | 1.0 | 9.59673E-01 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| **Table S54.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (PSO is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| DE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| DE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S54** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| IJAYA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S55.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (IJAYA is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 2.91949E-01 | 3.40696E-01 | 3.40696E-01 | 2.91949E-01 |
| PSO | Friedman Aligned | 5.39802E-08 | 5.39802E-08 | 5.39802E-08 | 5.39802E-08 |
| PSO | Quade | 9.99326E-01 | 1.0 | 1.0 | 9.99326E-01 |
| DE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| DE | Friedman Aligned | 4.13136E-07 | 7.62714E-07 | 7.62714E-07 | 7.62713E-07 |
| DE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 1.40272E-02 | 3.58013E-02 | 3.58013E-02 | 3.52243E-02 |
| MABC | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 9.38730E-01 | 1.0 | 1.0 | 9.99973E-01 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S55** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 7.29777E-01 | 1.0 | 1.0 | 9.92025E-01 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 7.04009E-01 | 1.0 | 1.0 | 9.85215E-01 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman Aligned | 7.90035E-02 | 2.50048E-01 | 2.50048E-01 | 2.23709E-01 |
| CWOA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S56.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (ISCA is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 3.58882E-02 | 3.64967E-02 | 3.64967E-02 | 3.58882E-02 |
| PSO | Friedman Aligned | 2.40712E-09 | 2.40712E-09 | 2.40712E-09 | 2.40712E-09 |
| PSO | Quade | 9.39986E-01 | 1.0 | 1.0 | 9.39986E-01 |
| DE | Friedman | 9.74166E-01 | 1.0 | 1.0 | 9.98829E-01 |
| DE | Friedman Aligned | 2.06881E-05 | 3.81937E-05 | 3.81937E-05 | 3.81931E-05 |
| DE | Quade | 9.97867E-01 | 1.0 | 1.0 | 9.99998E-01 |
| IJAYA | Friedman | 9.74166E-01 | 1.0 | 1.0 | 9.98829E-01 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 9.97867E-01 | 1.0 | 1.0 | 9.99988E-01 |
| CWOA | Friedman | 9.74166E-01 | 1.0 | 1.0 | 9.99716E-01 |
| CWOA | Friedman Aligned | 3.77795E-01 | 1.0 | 1.0 | 7.67754E-01 |
| CWOA | Quade | 9.97867E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 9.85128E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 9.96719E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Quade | 9.97867E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 9.85128E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 9.97867E-01 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S56** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 1.17077E-01 | 3.11585E-01 | 3.11585E-01 | 2.71001E-01 |
| MABC | Quade | 9.97867E-01 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Quade | 9.97867E-01 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| **Table S57.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (NNA is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 7.49779E-02 | 7.77045E-02 | 7.77045E-02 | 7.49779E-02 |
| PSO | Friedman Aligned | 1.24163E-09 | 1.24163E-09 | 1.24163E-09 | 1.24163E-09 |
| PSO | Quade | 9.78151E-01 | 1.0 | 1.0 | 9.78151E-01 |
| DE | Friedman | 9.96576E-01 | 1.0 | 1.0 | 9.99972E-01 |
| DE | Friedman Aligned | 4.03245E-05 | 7.44465E-05 | 7.44465E-05 | 7.44440E-05 |
| DE | Quade | 9.99784E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman | 9.96576E-01 | 1.0 | 1.0 | 9.99972E-01 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 9.99784E-01 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 9.96576E-01 | 1.0 | 1.0 | 9.99998E-01 |
| CWOA | Friedman Aligned | 4.67657E-01 | 1.0 | 1.0 | 8.56281E-01 |
| CWOA | Quade | 9.99784E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 9.99994E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 9.99784E-01 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S57** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 1.62259E-01 | 4.40367E-01 | 4.40367E-01 | 3.62005E-01 |
| MABC | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S58.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (CWOA is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 1.92232E-01 | 2.11737E-01 | 2.11737E-01 | 1.92232E-01 |
| PSO | Friedman Aligned | 3.20410E-13 | 3.20410E-13 | 3.20410E-13 | 3.20410E-13 |
| PSO | Quade | 9.91529E-01 | 1.0 | 1.0 | 9.91529E-01 |
| DE | Friedman | 9.99993E-01 | 1.0 | 1.0 | 1.0 |
| DE | Friedman Aligned | 9.96242E-03 | 1.84702E-02 | 1.84702E-02 | 1.83146E-02 |
| DE | Quade | 9.99984E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman | 9.99993E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 9.99984E-01 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 9.42723E-01 | 1.0 | 1.0 | 9.99297E-01 |
| MABC | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S58** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| WW | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S59.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (WW is the control algorithm, *I*02 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 7.76548E-02 | 8.05850E-02 | 8.05850E-02 | 7.76548E-02 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 9.90947E-01 | 1.0 | 1.0 | 9.90947E-01 |
| DE | Friedman | 9.96991E-01 | 1.0 | 1.0 | 9.99978E-01 |
| DE | Friedman Aligned | 2.24129E-10 | 5.68944E-10 | 5.68944E-10 | 5.68944E-10 |
| DE | Quade | 9.99980E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman | 9.96991E-01 | 1.0 | 1.0 | 9.99978E-01 |
| IJAYA | Friedman Aligned | 2.35391E-04 | 8.69175E-04 | 8.69175E-04 | 8.68860E-04 |
| IJAYA | Quade | 9.99980E-01 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 9.96991E-01 | 1.0 | 1.0 | 9.99998E-01 |
| CWOA | Friedman Aligned | 5.19146E-09 | 1.59737E-08 | 1.59737E-08 | 1.59737E-08 |
| CWOA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| ADELI | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NDE | Friedman Aligned | 3.36136E-01 | 1.0 | 1.0 | 7.57830E-01 |
| NDE | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| MABC | Friedman Aligned | 1.10441E-10 | 2.03890E-10 | 2.03890E-10 | 2.03890E-10 |
| MABC | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S59** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| TLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| TLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| GOTLBO | Friedman Aligned | 8.28991E-05 | 3.12472E-04 | 3.12472E-04 | 3.12430E-04 |
| GOTLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 1.16470E-05 | 4.30045E-05 | 4.30045E-05 | 4.30037E-05 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 7.14139E-06 | 2.47202E-05 | 2.47202E-05 | 2.47200E-05 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |