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| --- | --- | --- | --- | --- | --- |
| **Table S102.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (DE is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 1.12065E-07 | 1.12065E-07 | 1.12065E-07 | 1.12065E-07 |
| PSO | Friedman Aligned | 9.63011E-11 | 2.44457E-10 | 2.36238E-10 | 2.44457E-10 |
| PSO | Quade | 1.61148E-01 | 1.74539E-01 | 1.74539E-01 | 1.61148E-01 |
| NNA | Friedman | 1.32148E-02 | 2.45341E-02 | 2.45341E-02 | 2.42601E-02 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 8.03072E-01 | 1.0 | 1.0 | 9.50205E-01 |
| ISCA | Friedman | 2.56447E-02 | 6.57499E-02 | 6.57499E-02 | 6.38197E-02 |
| ISCA | Friedman Aligned | 1.65848E-09 | 6.12362E-09 | 6.12362E-09 | 6.12362E-09 |
| ISCA | Quade | 8.03072E-01 | 1.0 | 1.0 | 9.58241E-01 |
| WW | Friedman | 2.56658E-02 | 7.96836E-02 | 7.96836E-02 | 7.68862E-02 |
| WW | Friedman Aligned | 5.78214E-09 | 2.17942E-08 | 2.17942E-08 | 2.17942E-08 |
| WW | Quade | 8.03072E-01 | 1.0 | 1.0 | 9.56969E-01 |
| CWOA | Friedman | 7.51644E-02 | 2.66458E-01 | 2.66458E-01 | 2.36988E-01 |
| CWOA | Friedman Aligned | 9.81004E-12 | 1.81108E-11 | 1.81108E-11 | 1.81108E-11 |
| CWOA | Quade | 8.03072E-01 | 1.0 | 1.0 | 9.70509E-01 |
| GOTLBO | Friedman | 1.36860E-01 | 5.25381E-01 | 5.25381E-01 | 4.19245E-01 |
| GOTLBO | Friedman Aligned | 8.50149E-10 | 2.94282E-09 | 2.94282E-09 | 2.94282E-09 |
| GOTLBO | Quade | 8.03072E-01 | 1.0 | 1.0 | 9.95652E-01 |
| IJAYA | Friedman | 1.60075E-01 | 6.27579E-01 | 6.27579E-01 | 4.81863E-01 |
| IJAYA | Friedman Aligned | 9.63011E-11 | 2.44457E-10 | 2.36238E-10 | 2.44457E-10 |
| IJAYA | Quade | 8.03072E-01 | 1.0 | 1.0 | 9.95652E-01 |
| MABC | Friedman | 4.30602E-01 | 1.0 | 1.0 | 8.74997E-01 |
| MABC | Friedman Aligned | 2.44538E-03 | 9.03334E-03 | 9.03334E-03 | 8.99941E-03 |
| MABC | Quade | 8.68097E-01 | 1.0 | 1.0 | 9.99435E-01 |
| **Table S102** (*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 S103.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (EBLSHADE is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| IJAYA | Friedman | 4.61853E-13 | 4.61853E-13 | 4.61853E-13 | 4.61853E-13 |
| IJAYA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| IJAYA | Quade | 1.77868E-02 | 6.59918E-02 | 5.94563E-02 | 6.41177E-02 |
| GOTLBO | Friedman | 6.49480E-13 | 1.19904E-12 | 1.19904E-12 | 1.19904E-12 |
| GOTLBO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| GOTLBO | Quade | 1.77868E-02 | 6.59918E-02 | 5.94563E-02 | 6.41177E-02 |
| MABC | Friedman | 7.57246E-13 | 1.92224E-12 | 1.92224E-12 | 1.92224E-12 |
| MABC | Friedman Aligned | 1.47660E-10 | 4.54338E-10 | 4.54338E-10 | 4.54338E-10 |
| MABC | Quade | 3.24065E-02 | 1.20412E-01 | 1.20412E-01 | 1.14530E-01 |
| CWOA | Friedman | 3.15142E-12 | 9.69669E-12 | 9.69669E-12 | 9.69669E-12 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 9.53581E-03 | 2.92630E-02 | 2.92630E-02 | 2.88853E-02 |
| WW | Friedman | 4.24027E-11 | 1.46779E-10 | 1.46779E-10 | 1.46779E-10 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 9.53581E-03 | 2.05775E-02 | 2.05775E-02 | 2.03861E-02 |
| ISCA | Friedman | 5.89440E-11 | 2.17639E-10 | 2.17639E-10 | 2.17639E-10 |
| ISCA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| ISCA | Quade | 9.53581E-03 | 2.25189E-02 | 2.25189E-02 | 2.22920E-02 |
| NNA | Friedman | 2.68345E-10 | 1.01145E-09 | 1.01145E-09 | 1.01145E-09 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 9.53581E-03 | 1.76760E-02 | 1.76760E-02 | 1.75335E-02 |
| DE | Friedman | 4.09489E-10 | 1.51196E-09 | 1.51196E-09 | 1.51196E-09 |
| DE | Friedman Aligned | 8.23115E-11 | 2.96018E-10 | 2.84924E-10 | 2.96018E-10 |
| DE | Quade | 7.19727E-02 | 2.51985E-01 | 2.51985E-01 | 2.27835E-01 |
| **Table S103** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 1.40866E-09 | 4.87613E-09 | 4.87613E-09 | 4.87613E-09 |
| PSO | Friedman Aligned | 8.01715E-11 | 2.96018E-10 | 2.84924E-10 | 2.96018E-10 |
| PSO | Quade | 1.23157E-04 | 1.23164E-04 | 1.23164E-04 | 1.23157E-04 |
| NDE | Friedman | 8.11697E-06 | 2.49753E-05 | 2.49753E-05 | 2.49751E-05 |
| NDE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NDE | Quade | 1.39601E-01 | 4.36892E-01 | 4.36892E-01 | 3.70384E-01 |
| TLBO | Friedman | 1.57702E-01 | 4.05499E-01 | 4.05499E-01 | 3.53159E-01 |
| TLBO | Friedman Aligned | 9.86791E-02 | 2.52471E-01 | 2.52471E-01 | 2.31820E-01 |
| TLBO | Quade | 6.59156E-01 | 1.0 | 1.0 | 9.34925E-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 S104.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (ADELI is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| MABC | Friedman | 4.24327E-13 | 4.24327E-13 | 4.24327E-13 | 4.24327E-13 |
| MABC | Friedman Aligned | 1.30897E-10 | 4.93382E-10 | 4.67194E-10 | 4.93382E-10 |
| MABC | Quade | 2.61883E-02 | 9.71881E-02 | 9.71881E-02 | 9.33364E-02 |
| IJAYA | Friedman | 1.17484E-12 | 2.16893E-12 | 2.16893E-12 | 2.16893E-12 |
| IJAYA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| IJAYA | Quade | 1.40454E-02 | 5.20574E-02 | 4.69358E-02 | 5.08871E-02 |
| GOTLBO | Friedman | 2.08219E-12 | 5.28555E-12 | 5.28555E-12 | 5.28555E-12 |
| GOTLBO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| GOTLBO | Quade | 1.40454E-02 | 5.20574E-02 | 4.69358E-02 | 5.08871E-02 |
| CWOA | Friedman | 1.27601E-11 | 3.92619E-11 | 3.92619E-11 | 3.92619E-11 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 7.23714E-03 | 2.25799E-02 | 2.25799E-02 | 2.23546E-02 |
| DE | Friedman | 1.39301E-10 | 4.82194E-10 | 4.57383E-10 | 4.82194E-10 |
| DE | Friedman Aligned | 1.37839E-10 | 4.93382E-10 | 4.77135E-10 | 4.93382E-10 |
| DE | Quade | 5.97508E-02 | 2.08782E-01 | 2.08782E-01 | 1.92059E-01 |
| WW | Friedman | 1.39301E-10 | 4.82194E-10 | 4.57383E-10 | 4.82194E-10 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 7.23714E-03 | 1.56830E-02 | 1.56830E-02 | 1.55717E-02 |
| ISCA | Friedman | 1.59993E-10 | 6.03050E-10 | 6.03050E-10 | 6.03050E-10 |
| ISCA | Friedman Aligned | 2.51032E-06 | 7.72406E-06 | 7.72406E-06 | 7.72404E-06 |
| ISCA | Quade | 7.23714E-03 | 1.72329E-02 | 1.72329E-02 | 1.70999E-02 |
| NNA | Friedman | 6.61310E-10 | 2.44176E-09 | 2.44176E-09 | 2.44176E-09 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 7.23714E-03 | 1.34020E-02 | 1.34020E-02 | 1.33199E-02 |
| **Table S104** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 2.30556E-09 | 7.98080E-09 | 7.98080E-09 | 7.98080E-09 |
| PSO | Friedman Aligned | 1.30897E-10 | 4.93382E-10 | 4.67194E-10 | 4.93382E-10 |
| PSO | Quade | 8.49909E-05 | 8.49943E-05 | 8.49943E-05 | 8.49909E-05 |
| NDE | Friedman | 2.70991E-06 | 8.33820E-06 | 8.33820E-06 | 8.33817E-06 |
| NDE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NDE | Quade | 1.18862E-01 | 3.71008E-01 | 3.71008E-01 | 3.22508E-01 |
| TLBO | Friedman | 9.99240E-02 | 2.55682E-01 | 2.55682E-01 | 2.34510E-01 |
| TLBO | Friedman Aligned | 2.97627E-04 | 7.55533E-04 | 7.55533E-04 | 7.55343E-04 |
| TLBO | Quade | 6.04542E-01 | 1.0 | 9.88447E-01 | 9.05102E-01 |
| EBLSHADE | Friedman | 8.44298E-01 | 1.0 | 9.33322E-01 | 9.67726E-01 |
| EBLSHADE | Friedman Aligned | 5.75004E-02 | 1.06394E-01 | 1.06394E-01 | 1.03564E-01 |
| EBLSHADE | Quade | 9.49745E-01 | 1.0 | 9.88447E-01 | 9.95999E-01 |
| STLBO | Friedman | 9.33322E-01 | 1.0 | 9.33322E-01 | 9.67726E-01 |
| STLBO | Friedman Aligned | 9.97074E-01 | 9.97074E-01 | 9.97074E-01 | 9.97074E-01 |
| STLBO | Quade | 9.88447E-01 | 1.0 | 9.88447E-01 | 9.95999E-01 |

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| **Table S105.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (NDE is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 5.48450E-13 | 5.48450E-13 | 5.48450E-13 | 5.48450E-13 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 5.93630E-02 | 6.10542E-02 | 6.10542E-02 | 5.93630E-02 |
| NNA | Friedman | 6.21587E-06 | 1.14755E-05 | 1.14755E-05 | 1.14754E-05 |
| NNA | Friedman Aligned | 8.83864E-11 | 3.26350E-10 | 3.26350E-10 | 3.26350E-10 |
| NNA | Quade | 5.46368E-01 | 1.0 | 1.0 | 7.67608E-01 |
| ISCA | Friedman | 2.15654E-05 | 5.47435E-05 | 5.47435E-05 | 5.47421E-05 |
| ISCA | Friedman Aligned | 5.41510E-11 | 2.04108E-10 | 2.04108E-10 | 2.04108E-10 |
| ISCA | Quade | 5.46368E-01 | 1.0 | 1.0 | 7.94113E-01 |
| WW | Friedman | 2.54032E-05 | 7.81643E-05 | 7.81643E-05 | 7.81616E-05 |
| WW | Friedman Aligned | 2.52162E-11 | 9.31060E-11 | 9.31060E-11 | 9.31060E-11 |
| WW | Quade | 5.46368E-01 | 1.0 | 1.0 | 7.87852E-01 |
| CWOA | Friedman | 1.70294E-04 | 5.89510E-04 | 5.89510E-04 | 5.89355E-04 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 5.46368E-01 | 1.0 | 1.0 | 8.32107E-01 |
| GOTLBO | Friedman | 5.51957E-04 | 2.03830E-03 | 2.03830E-03 | 2.03648E-03 |
| GOTLBO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| GOTLBO | Quade | 5.46368E-01 | 1.0 | 1.0 | 9.41246E-01 |
| IJAYA | Friedman | 8.19698E-04 | 3.09021E-03 | 3.09021E-03 | 3.08612E-03 |
| IJAYA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| IJAYA | Quade | 5.46368E-01 | 1.0 | 1.0 | 9.41246E-01 |
| MABC | Friedman | 6.69221E-03 | 2.47416E-02 | 2.47416E-02 | 2.44879E-02 |
| MABC | Friedman Aligned | 1.31135E-09 | 4.53928E-09 | 4.53928E-09 | 4.53928E-09 |
| MABC | Quade | 6.42995E-01 | 1.0 | 1.0 | 9.77698E-01 |
| **Table S105** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 9.84763E-02 | 3.46279E-01 | 3.46279E-01 | 3.01524E-01 |
| DE | Friedman Aligned | 2.46722E-11 | 8.54037E-11 | 8.54037E-11 | 8.54037E-11 |
| DE | Quade | 8.43172E-01 | 1.0 | 1.0 | 9.98360E-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 S106.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (MABC is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 3.23303E-05 | 3.23308E-05 | 3.23308E-05 | 3.23303E-05 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 3.74066E-01 | 4.60169E-01 | 4.60169E-01 | 3.74066E-01 |
| NNA | Friedman | 2.44230E-01 | 5.05979E-01 | 5.05979E-01 | 4.03667E-01 |
| NNA | Friedman Aligned | 3.04347E-08 | 9.36452E-08 | 9.36452E-08 | 9.36452E-08 |
| NNA | Quade | 9.60869E-01 | 1.0 | 1.0 | 9.97479E-01 |
| ISCA | Friedman | 3.34378E-01 | 9.86196E-01 | 9.86196E-01 | 6.44147E-01 |
| ISCA | Friedman Aligned | 2.68086E-11 | 6.80527E-11 | 6.80527E-11 | 6.80527E-11 |
| ISCA | Quade | 9.60869E-01 | 1.0 | 1.0 | 9.98098E-01 |
| WW | Friedman | 3.34378E-01 | 1.0 | 1.0 | 6.85519E-01 |
| WW | Friedman Aligned | 2.27968E-11 | 4.20863E-11 | 4.20863E-11 | 4.20863E-11 |
| WW | Quade | 9.60869E-01 | 1.0 | 1.0 | 9.98033E-01 |
| CWOA | Friedman | 5.44864E-01 | 1.0 | 1.0 | 9.34440E-01 |
| CWOA | Friedman Aligned | 2.33931E-04 | 8.09818E-04 | 8.09818E-04 | 8.09527E-04 |
| CWOA | Quade | 9.60869E-01 | 1.0 | 1.0 | 9.99016E-01 |
| GOTLBO | Friedman | 7.04380E-01 | 1.0 | 1.0 | 9.88888E-01 |
| GOTLBO | Friedman Aligned | 3.35103E-03 | 1.26406E-02 | 1.26406E-02 | 1.25723E-02 |
| GOTLBO | Quade | 9.60869E-01 | 1.0 | 1.0 | 9.99985E-01 |
| IJAYA | Friedman | 7.42795E-01 | 1.0 | 1.0 | 9.94013E-01 |
| IJAYA | Friedman Aligned | 9.34352E-04 | 3.45078E-03 | 3.45078E-03 | 3.44558E-03 |
| IJAYA | Quade | 9.60869E-01 | 1.0 | 1.0 | 9.99985E-01 |
| 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 |
| **Table S106** (*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 S107.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (TLBO is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 1.24342E-03 | 1.24413E-03 | 1.24413E-03 | 1.24342E-03 |
| NNA | Friedman | 1.15463E-13 | 2.13163E-13 | 2.13163E-13 | 2.13163E-13 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 5.08290E-02 | 9.59217E-02 | 9.59217E-02 | 9.18149E-02 |
| ISCA | Friedman | 1.69346E-13 | 4.29878E-13 | 4.29878E-13 | 4.29878E-13 |
| ISCA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| ISCA | Quade | 5.08290E-02 | 1.14968E-01 | 1.14968E-01 | 1.09199E-01 |
| WW | Friedman | 2.55462E-13 | 7.86038E-13 | 7.86038E-13 | 7.86038E-13 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 5.08290E-02 | 1.07920E-01 | 1.07920E-01 | 1.02778E-01 |
| CWOA | Friedman | 6.62297E-12 | 2.29257E-11 | 2.29257E-11 | 2.29257E-11 |
| CWOA | Friedman Aligned | 1.32214E-10 | 4.88175E-10 | 4.88175E-10 | 4.88175E-10 |
| CWOA | Quade | 5.08290E-02 | 1.41499E-01 | 1.41499E-01 | 1.32919E-01 |
| GOTLBO | Friedman | 5.56590E-11 | 2.05510E-10 | 2.05510E-10 | 2.05510E-10 |
| GOTLBO | Friedman Aligned | 1.58709E-10 | 5.98211E-10 | 5.07874E-10 | 5.98211E-10 |
| GOTLBO | Quade | 7.32625E-02 | 2.76054E-01 | 2.47539E-01 | 2.44918E-01 |
| IJAYA | Friedman | 1.24403E-10 | 4.68905E-10 | 4.68905E-10 | 4.68905E-10 |
| IJAYA | Friedman Aligned | 1.58709E-10 | 5.98211E-10 | 5.07874E-10 | 5.98211E-10 |
| IJAYA | Quade | 7.32625E-02 | 2.76054E-01 | 2.47539E-01 | 2.44918E-01 |
| MABC | Friedman | 6.40678E-09 | 2.36558E-08 | 2.36558E-08 | 2.36558E-08 |
| MABC | Friedman Aligned | 1.58709E-10 | 5.98211E-10 | 5.07874E-10 | 5.98211E-10 |
| MABC | Quade | 1.14751E-01 | 4.33578E-01 | 4.33578E-01 | 3.62399E-01 |
| **Table S107** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 1.86918E-06 | 6.47023E-06 | 6.47023E-06 | 6.47021E-06 |
| DE | Friedman Aligned | 7.73811E-11 | 2.67858E-10 | 2.67858E-10 | 2.67858E-10 |
| DE | Quade | 2.13275E-01 | 7.65059E-01 | 7.65059E-01 | 5.64100E-01 |
| NDE | Friedman | 3.24249E-03 | 9.98062E-03 | 9.98062E-03 | 9.94333E-03 |
| NDE | Friedman Aligned | 1.10920E-09 | 3.41294E-09 | 3.41294E-09 | 3.41294E-09 |
| NDE | Quade | 3.50848E-01 | 1.0 | 1.0 | 7.35391E-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 |

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| --- | --- | --- | --- | --- | --- |
| **Table S108.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (GOTLBO is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 1.14886E-03 | 1.14947E-03 | 1.14947E-03 | 1.14886E-03 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 6.23178E-01 | 9.40245E-01 | 9.40245E-01 | 6.23178E-01 |
| NNA | Friedman | 7.90699E-01 | 1.0 | 1.0 | 9.44276E-01 |
| NNA | Friedman Aligned | 1.74782E-12 | 3.22675E-12 | 3.22675E-12 | 3.22675E-12 |
| NNA | Quade | 9.96635E-01 | 1.0 | 1.0 | 9.99973E-01 |
| ISCA | Friedman | 8.58987E-01 | 1.0 | 1.0 | 9.93075E-01 |
| ISCA | Friedman Aligned | 5.51352E-08 | 1.39958E-07 | 1.39958E-07 | 1.39958E-07 |
| ISCA | Quade | 9.96635E-01 | 1.0 | 1.0 | 9.99986E-01 |
| WW | Friedman | 8.58987E-01 | 1.0 | 1.0 | 9.95414E-01 |
| WW | Friedman Aligned | 3.83622E-04 | 1.18053E-03 | 1.18053E-03 | 1.17991E-03 |
| WW | Quade | 9.96635E-01 | 1.0 | 1.0 | 9.99983E-01 |
| CWOA | Friedman | 9.69231E-01 | 1.0 | 1.0 | 9.99994E-01 |
| CWOA | Friedman Aligned | 7.64084E-01 | 1.0 | 1.0 | 9.93258E-01 |
| CWOA | Quade | 9.96635E-01 | 1.0 | 1.0 | 9.99997E-01 |
| 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 |
| **Table S108** (*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 | 1.0 | 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 |
| 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 |
| IJAYA | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman Aligned | 9.20605E-01 | 1.0 | 1.0 | 9.99913E-01 |
| IJAYA | Quade | 9.99972E-01 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S109.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (STLBO is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| MABC | Friedman | 7.82263E-13 | 7.82263E-13 | 7.82263E-13 | 7.82263E-13 |
| MABC | Friedman Aligned | 1.30815E-10 | 4.93071E-10 | 4.68469E-10 | 4.93071E-10 |
| MABC | Quade | 2.72384E-02 | 1.01106E-01 | 1.01106E-01 | 9.69411E-02 |
| IJAYA | Friedman | 7.82263E-13 | 1.19904E-12 | 1.19904E-12 | 1.19904E-12 |
| IJAYA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| IJAYA | Quade | 1.46704E-02 | 5.43832E-02 | 4.90263E-02 | 5.31067E-02 |
| GOTLBO | Friedman | 1.18350E-12 | 3.00426E-12 | 3.00426E-12 | 3.00426E-12 |
| GOTLBO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| GOTLBO | Quade | 1.46704E-02 | 5.43832E-02 | 4.90263E-02 | 5.31067E-02 |
| CWOA | Friedman | 7.72016E-12 | 2.37543E-11 | 2.37543E-11 | 2.37543E-11 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 7.61417E-03 | 2.36840E-02 | 2.36840E-02 | 2.34363E-02 |
| WW | Friedman | 9.08066E-11 | 3.14331E-10 | 3.14331E-10 | 3.14331E-10 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 7.61417E-03 | 1.64871E-02 | 1.64871E-02 | 1.63641E-02 |
| ISCA | Friedman | 1.23284E-10 | 4.55202E-10 | 4.55202E-10 | 4.55202E-10 |
| ISCA | Friedman Aligned | 2.50662E-06 | 7.71268E-06 | 7.71268E-06 | 7.71266E-06 |
| ISCA | Quade | 7.61417E-03 | 1.81029E-02 | 1.81029E-02 | 1.79562E-02 |
| DE | Friedman | 1.84419E-10 | 6.95118E-10 | 6.95118E-10 | 6.95118E-10 |
| DE | Friedman Aligned | 1.37739E-10 | 4.93071E-10 | 4.76787E-10 | 4.93071E-10 |
| DE | Quade | 6.18417E-02 | 2.16161E-01 | 2.16161E-01 | 1.98262E-01 |
| NNA | Friedman | 4.55458E-10 | 1.68169E-09 | 1.68169E-09 | 1.68169E-09 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 7.61417E-03 | 1.41024E-02 | 1.41024E-02 | 1.40116E-02 |
| **Table S109** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 1.92899E-09 | 6.67728E-09 | 6.67728E-09 | 6.67728E-09 |
| PSO | Friedman Aligned | 1.30815E-10 | 4.93071E-10 | 4.68469E-10 | 4.93071E-10 |
| PSO | Quade | 9.09831E-05 | 9.09869E-05 | 9.09869E-05 | 9.09831E-05 |
| NDE | Friedman | 4.08314E-06 | 1.25635E-05 | 1.25635E-05 | 1.25635E-05 |
| NDE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NDE | Quade | 1.22455E-01 | 3.82395E-01 | 3.82395E-01 | 3.30971E-01 |
| TLBO | Friedman | 1.18855E-01 | 3.04601E-01 | 3.04601E-01 | 2.74721E-01 |
| TLBO | Friedman Aligned | 3.01915E-04 | 7.66418E-04 | 7.66418E-04 | 7.66223E-04 |
| TLBO | Quade | 6.14412E-01 | 1.0 | 1.0 | 9.11000E-01 |
| EBLSHADE | Friedman | 9.04828E-01 | 1.0 | 1.0 | 9.86993E-01 |
| EBLSHADE | Friedman Aligned | 5.79889E-02 | 1.07300E-01 | 1.07300E-01 | 1.04422E-01 |
| EBLSHADE | Quade | 9.59583E-01 | 1.0 | 1.0 | 9.97324E-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 S110.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (PSO is the control algorithm, *R*s 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 S110** (*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 S111.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (IJAYA is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 6.27525E-04 | 6.27707E-04 | 6.27707E-04 | 6.27525E-04 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 6.31482E-01 | 9.60899E-01 | 9.60899E-01 | 6.31482E-01 |
| NNA | Friedman | 6.91741E-01 | 1.0 | 1.0 | 8.86116E-01 |
| NNA | Friedman Aligned | 3.06237E-11 | 5.65361E-11 | 5.65361E-11 | 5.65361E-11 |
| NNA | Quade | 9.96978E-01 | 1.0 | 1.0 | 9.99978E-01 |
| ISCA | Friedman | 7.77272E-01 | 1.0 | 1.0 | 9.77902E-01 |
| ISCA | Friedman Aligned | 5.16236E-07 | 1.31045E-06 | 1.31045E-06 | 1.31045E-06 |
| ISCA | Quade | 9.96978E-01 | 1.0 | 1.0 | 9.99989E-01 |
| WW | Friedman | 7.77272E-01 | 1.0 | 1.0 | 9.84073E-01 |
| WW | Friedman Aligned | 1.81771E-03 | 5.59646E-03 | 5.59646E-03 | 5.58239E-03 |
| WW | Quade | 9.96978E-01 | 1.0 | 1.0 | 9.99987E-01 |
| CWOA | Friedman | 9.25970E-01 | 1.0 | 1.0 | 9.99878E-01 |
| CWOA | Friedman Aligned | 9.53239E-01 | 1.0 | 1.0 | 9.99975E-01 |
| CWOA | Quade | 9.96978E-01 | 1.0 | 1.0 | 9.99998E-01 |
| GOTLBO | Friedman | 9.90942E-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 |
| 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 |
| **Table S111** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| 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 |
| 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 S112.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (ISCA is the control algorithm, *R*s 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 | 2.88658E-12 | 2.88658E-12 | 2.88658E-12 | 2.88658E-12 |
| PSO | Quade | 9.10497E-01 | 1.0 | 1.0 | 9.10497E-01 |
| NNA | Friedman | 9.99834E-01 | 1.0 | 1.0 | 1.0 |
| NNA | Friedman Aligned | 5.04334E-01 | 1.0 | 1.0 | 7.26301E-01 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| 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 |
| **Table S112** (*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 |
| 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 |
| 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 S113.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (NNA is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 9.22987E-02 | 9.64801E-02 | 9.64801E-02 | 9.22987E-02 |
| PSO | Friedman Aligned | 3.98146E-10 | 3.98146E-10 | 3.98146E-10 | 3.98146E-10 |
| PSO | Quade | 9.54610E-01 | 1.0 | 1.0 | 9.54610E-01 |
| 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 |
| **Table S113** (*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 |
| 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 |
| 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 S114.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (CWOA is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 4.36171E-03 | 4.37052E-03 | 4.37052E-03 | 4.36171E-03 |
| PSO | Friedman Aligned | 5.39684E-08 | 9.96340E-08 | 9.96340E-08 | 9.96340E-08 |
| PSO | Quade | 8.53378E-01 | 1.0 | 1.0 | 8.53378E-01 |
| NNA | Friedman | 9.47047E-01 | 1.0 | 1.0 | 9.95593E-01 |
| NNA | Friedman Aligned | 9.03118E-10 | 9.03118E-10 | 9.03118E-10 | 9.03118E-10 |
| NNA | Quade | 9.99981E-01 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 9.73183E-01 | 1.0 | 1.0 | 9.99898E-01 |
| ISCA | Friedman Aligned | 4.17781E-06 | 1.06052E-05 | 1.06052E-05 | 1.06052E-05 |
| ISCA | Quade | 9.99981E-01 | 1.0 | 1.0 | 1.0 |
| WW | Friedman | 9.73183E-01 | 1.0 | 1.0 | 9.99955E-01 |
| WW | Friedman Aligned | 7.30958E-03 | 2.25482E-02 | 2.25482E-02 | 2.23207E-02 |
| WW | Quade | 9.99981E-01 | 1.0 | 1.0 | 1.0 |
| 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 |
| **Table S114** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| 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 |
| 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 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S115.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (WW is the control algorithm, *R*s evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 2.42446E-02 | 2.45202E-02 | 2.45202E-02 | 2.42446E-02 |
| PSO | Friedman Aligned | 3.88231E-08 | 3.88231E-08 | 3.88231E-08 | 3.88231E-08 |
| PSO | Quade | 9.32459E-01 | 1.0 | 1.0 | 9.32459E-01 |
| NNA | Friedman | 9.99213E-01 | 1.0 | 1.0 | 9.99998E-01 |
| NNA | Friedman Aligned | 3.27961E-03 | 6.06308E-03 | 6.06308E-03 | 6.04626E-03 |
| NNA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman | 9.99986E-01 | 1.0 | 1.0 | 1.0 |
| ISCA | Friedman Aligned | 2.53096E-01 | 7.16378E-01 | 7.16378E-01 | 5.23253E-01 |
| ISCA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| 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 |
| **Table S115** (*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 | 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 |
| 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 |
| 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 |