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| --- | --- | --- | --- | --- | --- |
| **Table S60.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (DE is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 3.92321E-10 | 3.92321E-10 | 3.92321E-10 | 3.92321E-10 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 2.79373E-01 | 3.23540E-01 | 3.23540E-01 | 2.79373E-01 |
| PSO | Friedman | 2.88559E-05 | 5.32730E-05 | 5.32730E-05 | 5.32717E-05 |
| PSO | Friedman Aligned | 1.74677E-10 | 6.44961E-10 | 6.44961E-10 | 6.44961E-10 |
| PSO | Quade | 5.37934E-01 | 1.0 | 1.0 | 7.59568E-01 |
| CWOA | Friedman | 2.43825E-04 | 6.18999E-04 | 6.18999E-04 | 6.18825E-04 |
| CWOA | Friedman Aligned | 7.59015E-11 | 2.62736E-10 | 2.62736E-10 | 2.62736E-10 |
| CWOA | Quade | 5.65449E-01 | 1.0 | 1.0 | 8.79446E-01 |
| NNA | Friedman | 6.24368E-04 | 1.92155E-03 | 1.92155E-03 | 1.91989E-03 |
| NNA | Friedman Aligned | 3.95173E-11 | 1.21592E-10 | 1.21592E-10 | 1.21592E-10 |
| NNA | Quade | 5.65449E-01 | 1.0 | 1.0 | 9.06685E-01 |
| GOTLBO | Friedman | 2.71581E-02 | 9.48059E-02 | 9.48059E-02 | 9.09078E-02 |
| GOTLBO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| GOTLBO | Quade | 7.47711E-01 | 1.0 | 1.0 | 9.91495E-01 |
| ISCA | Friedman | 1.51455E-01 | 5.83984E-01 | 5.83984E-01 | 4.54688E-01 |
| ISCA | Friedman Aligned | 4.49465E-10 | 1.69414E-09 | 1.69414E-09 | 1.69414E-09 |
| ISCA | Quade | 8.49293E-01 | 1.0 | 1.0 | 9.99077E-01 |
| MABC | Friedman | 7.73122E-01 | 1.0 | 1.0 | 9.96269E-01 |
| MABC | Friedman Aligned | 1.26240E-12 | 3.20455E-12 | 3.20455E-12 | 3.20455E-12 |
| MABC | Quade | 9.33013E-01 | 1.0 | 1.0 | 9.99962E-01 |
| IJAYA | Friedman | 9.84761E-01 | 1.0 | 1.0 | 1.0 |
| IJAYA | Friedman Aligned | 8.57775E-01 | 1.0 | 1.0 | 9.99254E-01 |
| IJAYA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |
| **Table S60** (*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 S61.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (EBLSHADE is the control algorithm, *n*2 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 | 1.36721E-03 | 2.52555E-03 | 2.52555E-03 | 2.52263E-03 |
| ISCA | Friedman | 1.78968E-13 | 3.30402E-13 | 3.30402E-13 | 3.30402E-13 |
| ISCA | Friedman Aligned | 1.55372E-10 | 5.73682E-10 | 5.73682E-10 | 5.73682E-10 |
| ISCA | Quade | 1.65281E-02 | 6.13009E-02 | 6.13009E-02 | 5.96818E-02 |
| GOTLBO | Friedman | 1.95883E-11 | 4.97242E-11 | 4.97242E-11 | 4.97242E-11 |
| GOTLBO | Friedman Aligned | 2.08030E-10 | 7.84112E-10 | 7.84112E-10 | 7.84112E-10 |
| GOTLBO | Quade | 8.54988E-03 | 2.96740E-02 | 2.96740E-02 | 2.92856E-02 |
| MABC | Friedman | 3.70161E-11 | 1.13896E-10 | 1.13896E-10 | 1.13896E-10 |
| MABC | Friedman Aligned | 4.17948E-11 | 1.28599E-10 | 1.28599E-10 | 1.28599E-10 |
| MABC | Quade | 2.91472E-02 | 1.10612E-01 | 1.10612E-01 | 1.05504E-01 |
| IJAYA | Friedman | 8.24453E-10 | 2.85388E-09 | 2.85388E-09 | 2.85388E-09 |
| IJAYA | Friedman Aligned | 2.11001E-09 | 7.30389E-09 | 7.30389E-09 | 7.30389E-09 |
| IJAYA | Quade | 5.50979E-02 | 2.05651E-01 | 1.80331E-01 | 1.88814E-01 |
| DE | Friedman | 1.26059E-09 | 4.65450E-09 | 4.65450E-09 | 4.65450E-09 |
| DE | Friedman Aligned | 9.99304E-10 | 3.68974E-09 | 3.68974E-09 | 3.68974E-09 |
| DE | Quade | 5.50979E-02 | 2.05651E-01 | 1.80331E-01 | 1.88814E-01 |
| NNA | Friedman | 2.52900E-09 | 9.53238E-09 | 9.53238E-09 | 9.53238E-09 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 2.46551E-03 | 7.59267E-03 | 7.59267E-03 | 7.56678E-03 |
| CWOA | Friedman | 7.00046E-09 | 2.58479E-08 | 2.31404E-08 | 2.58479E-08 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 2.22641E-03 | 5.65651E-03 | 5.65651E-03 | 5.64199E-03 |
| **Table S61** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 7.00046E-09 | 2.58479E-08 | 2.31404E-08 | 2.58479E-08 |
| WW | Friedman Aligned | 1.32567E-10 | 4.58885E-10 | 4.58885E-10 | 4.58885E-10 |
| WW | Quade | 1.69100E-04 | 1.69113E-04 | 1.69113E-04 | 1.69100E-04 |
| NDE | Friedman | 1.47046E-04 | 4.52458E-04 | 4.52458E-04 | 4.52382E-04 |
| NDE | Friedman Aligned | 6.50237E-07 | 2.00073E-06 | 2.00073E-06 | 2.00073E-06 |
| NDE | Quade | 2.62860E-01 | 8.36446E-01 | 8.36446E-01 | 6.08744E-01 |
| TLBO | Friedman | 1.57702E-01 | 4.05499E-01 | 4.05499E-01 | 3.53159E-01 |
| TLBO | Friedman Aligned | 4.66638E-01 | 1.0 | 1.0 | 7.97205E-01 |
| TLBO | Quade | 7.20268E-01 | 1.0 | 1.0 | 9.60593E-01 |
| STLBO | Friedman | 9.63022E-01 | 1.0 | 1.0 | 9.97729E-01 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 9.70725E-01 | 1.0 | 1.0 | 9.98525E-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 S62.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (ADELI is the control algorithm, *n*2 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 | 1.08556E-03 | 2.00503E-03 | 2.00503E-03 | 2.00319E-03 |
| ISCA | Friedman | 4.21441E-13 | 7.78044E-13 | 7.78044E-13 | 7.78044E-13 |
| ISCA | Friedman Aligned | 1.77441E-10 | 6.55168E-10 | 6.55168E-10 | 6.55168E-10 |
| ISCA | Quade | 1.38937E-02 | 5.14932E-02 | 5.14932E-02 | 5.03480E-02 |
| MABC | Friedman | 2.15926E-11 | 5.48119E-11 | 5.48119E-11 | 5.48119E-11 |
| MABC | Friedman Aligned | 5.46148E-11 | 1.68046E-10 | 1.68046E-10 | 1.68046E-10 |
| MABC | Quade | 2.48402E-02 | 9.41718E-02 | 9.41718E-02 | 9.04551E-02 |
| GOTLBO | Friedman | 2.92194E-11 | 8.99059E-11 | 8.99059E-11 | 8.99059E-11 |
| GOTLBO | Friedman Aligned | 1.87348E-10 | 7.06158E-10 | 7.06158E-10 | 7.06158E-10 |
| GOTLBO | Quade | 7.08114E-03 | 2.45652E-02 | 2.45652E-02 | 2.42987E-02 |
| IJAYA | Friedman | 3.81470E-10 | 1.32047E-09 | 1.32047E-09 | 1.32047E-09 |
| IJAYA | Friedman Aligned | 5.75403E-09 | 1.99178E-08 | 1.99178E-08 | 1.99178E-08 |
| IJAYA | Quade | 4.77133E-02 | 1.77825E-01 | 1.56099E-01 | 1.65159E-01 |
| DE | Friedman | 5.89532E-10 | 2.17673E-09 | 2.17673E-09 | 2.17673E-09 |
| DE | Friedman Aligned | 3.00876E-09 | 1.11092E-08 | 1.11092E-08 | 1.11092E-08 |
| DE | Quade | 4.77133E-02 | 1.77825E-01 | 1.56099E-01 | 1.65159E-01 |
| NNA | Friedman | 4.05858E-09 | 1.52977E-08 | 1.52977E-08 | 1.52977E-08 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 1.99442E-03 | 6.14092E-03 | 6.14092E-03 | 6.12398E-03 |
| WW | Friedman | 9.35983E-09 | 3.45594E-08 | 3.32115E-08 | 3.45594E-08 |
| WW | Friedman Aligned | 1.45939E-10 | 5.05172E-10 | 5.05172E-10 | 5.05172E-10 |
| WW | Quade | 1.29473E-04 | 1.29480E-04 | 1.29480E-04 | 1.29473E-04 |
| **Table S62** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| CWOA | Friedman | 9.59443E-09 | 3.45594E-08 | 3.32115E-08 | 3.45594E-08 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 1.79060E-03 | 4.54851E-03 | 4.54851E-03 | 4.53912E-03 |
| NDE | Friedman | 8.95473E-05 | 2.75533E-04 | 2.75533E-04 | 2.75505E-04 |
| NDE | Friedman Aligned | 4.36010E-08 | 1.34157E-07 | 1.34157E-07 | 1.34157E-07 |
| NDE | Quade | 2.38174E-01 | 7.55260E-01 | 7.55260E-01 | 5.67008E-01 |
| TLBO | Friedman | 1.24750E-01 | 3.19870E-01 | 3.19870E-01 | 2.86976E-01 |
| TLBO | Friedman Aligned | 2.17176E-01 | 5.61378E-01 | 5.61378E-01 | 4.62882E-01 |
| TLBO | Quade | 6.79515E-01 | 1.0 | 9.53684E-01 | 9.44344E-01 |
| STLBO | Friedman | 8.79054E-01 | 1.0 | 9.04861E-01 | 9.79755E-01 |
| STLBO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| STLBO | Quade | 9.31129E-01 | 1.0 | 9.53684E-01 | 9.92841E-01 |
| EBLSHADE | Friedman | 9.04861E-01 | 1.0 | 9.04861E-01 | 9.79755E-01 |
| EBLSHADE | Friedman Aligned | 6.46794E-01 | 1.0 | 1.0 | 8.53584E-01 |
| EBLSHADE | Quade | 9.53684E-01 | 1.0 | 9.53684E-01 | 9.92841E-01 |

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| **Table S63.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (NDE is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 5.95906E-11 | 5.95906E-11 | 5.95906E-11 | 5.95906E-11 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 8.92612E-02 | 1.71378E-01 | 1.71378E-01 | 1.58537E-01 |
| WW | Friedman | 1.13108E-10 | 2.08814E-10 | 2.08814E-10 | 2.08814E-10 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 2.45418E-02 | 2.48242E-02 | 2.48242E-02 | 2.45418E-02 |
| CWOA | Friedman | 8.66736E-10 | 2.20018E-09 | 2.20018E-09 | 2.20018E-09 |
| CWOA | Friedman Aligned | 1.27564E-10 | 4.71006E-10 | 4.71006E-10 | 4.71006E-10 |
| CWOA | Quade | 1.10293E-01 | 2.92688E-01 | 2.92688E-01 | 2.56697E-01 |
| NNA | Friedman | 4.29575E-09 | 1.32177E-08 | 1.32177E-08 | 1.32177E-08 |
| NNA | Friedman Aligned | 1.65481E-10 | 5.72820E-10 | 5.72820E-10 | 5.72820E-10 |
| NNA | Quade | 1.10293E-01 | 3.47534E-01 | 3.47534E-01 | 2.97926E-01 |
| GOTLBO | Friedman | 2.48635E-06 | 8.60661E-06 | 8.60661E-06 | 8.60658E-06 |
| GOTLBO | Friedman Aligned | 7.60474E-11 | 2.86640E-10 | 2.86640E-10 | 2.86640E-10 |
| GOTLBO | Quade | 2.22940E-01 | 8.32115E-01 | 8.32115E-01 | 5.82358E-01 |
| ISCA | Friedman | 7.67415E-05 | 2.83359E-04 | 2.83359E-04 | 2.83324E-04 |
| ISCA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| ISCA | Quade | 3.11725E-01 | 1.0 | 1.0 | 7.48251E-01 |
| MABC | Friedman | 6.08165E-03 | 2.29554E-02 | 2.29554E-02 | 2.27308E-02 |
| MABC | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| MABC | Quade | 4.09668E-01 | 1.0 | 1.0 | 8.62846E-01 |
| IJAYA | Friedman | 2.38708E-02 | 8.85474E-02 | 8.85474E-02 | 8.53440E-02 |
| IJAYA | Friedman Aligned | 1.19504E-12 | 4.13669E-12 | 4.13669E-12 | 4.13669E-12 |
| IJAYA | Quade | 5.51337E-01 | 1.0 | 1.0 | 9.48146E-01 |
| **Table S63** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 2.75393E-02 | 9.57372E-02 | 9.57372E-02 | 9.21405E-02 |
| DE | Friedman Aligned | 1.55452E-11 | 5.73976E-11 | 5.73976E-11 | 5.73976E-11 |
| DE | Quade | 5.51337E-01 | 1.0 | 1.0 | 9.48146E-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 S64.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (MABC is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 1.84990E-08 | 1.84990E-08 | 1.84990E-08 | 1.84990E-08 |
| WW | Friedman Aligned | 2.64637E-10 | 8.14269E-10 | 8.14269E-10 | 8.14269E-10 |
| WW | Quade | 4.97749E-01 | 6.70733E-01 | 6.70733E-01 | 4.97749E-01 |
| PSO | Friedman | 4.25680E-04 | 7.86013E-04 | 7.86013E-04 | 7.85730E-04 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 7.58062E-01 | 1.0 | 1.0 | 9.27185E-01 |
| CWOA | Friedman | 2.60995E-03 | 6.63191E-03 | 6.63191E-03 | 6.61195E-03 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 7.72259E-01 | 1.0 | 1.0 | 9.76617E-01 |
| NNA | Friedman | 5.64123E-03 | 1.73916E-02 | 1.73916E-02 | 1.72562E-02 |
| NNA | Friedman Aligned | 1.26098E-09 | 4.36494E-09 | 4.36494E-09 | 4.36494E-09 |
| NNA | Quade | 7.72259E-01 | 1.0 | 1.0 | 9.84364E-01 |
| GOTLBO | Friedman | 1.24793E-01 | 4.49778E-01 | 4.49778E-01 | 3.69603E-01 |
| GOTLBO | Friedman Aligned | 2.57868E-13 | 6.54587E-13 | 6.54587E-13 | 6.54587E-13 |
| GOTLBO | Quade | 9.07365E-01 | 1.0 | 1.0 | 9.99735E-01 |
| ISCA | Friedman | 4.35559E-01 | 1.0 | 1.0 | 8.78968E-01 |
| ISCA | Friedman Aligned | 5.82208E-05 | 2.14973E-04 | 2.14973E-04 | 2.14952E-04 |
| ISCA | Quade | 9.69469E-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 |
| **Table S64** (*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 |
| 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 | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S65.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (TLBO is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| GOTLBO | Friedman | 5.46141E-12 | 5.46141E-12 | 5.46141E-12 | 5.46141E-12 |
| GOTLBO | Friedman Aligned | 1.85656E-10 | 6.85500E-10 | 6.85500E-10 | 6.85500E-10 |
| GOTLBO | Quade | 3.21257E-02 | 1.12323E-01 | 1.12323E-01 | 1.06876E-01 |
| NNA | Friedman | 5.46141E-12 | 7.30616E-12 | 7.30616E-12 | 7.30616E-12 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 1.10836E-02 | 3.42350E-02 | 3.42350E-02 | 3.37124E-02 |
| CWOA | Friedman | 1.70145E-11 | 4.31906E-11 | 4.31906E-11 | 4.31906E-11 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 1.04534E-02 | 2.66429E-02 | 2.66429E-02 | 2.63226E-02 |
| PSO | Friedman | 2.64060E-10 | 8.12492E-10 | 7.63813E-10 | 8.12492E-10 |
| PSO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| PSO | Quade | 7.07405E-03 | 1.30990E-02 | 1.30990E-02 | 1.30207E-02 |
| ISCA | Friedman | 2.64060E-10 | 8.12492E-10 | 7.63813E-10 | 8.12492E-10 |
| ISCA | Friedman Aligned | 1.03659E-10 | 3.90714E-10 | 3.90714E-10 | 3.90714E-10 |
| ISCA | Quade | 5.54732E-02 | 2.07973E-01 | 2.07973E-01 | 1.90003E-01 |
| WW | Friedman | 3.54090E-10 | 1.30741E-09 | 1.30741E-09 | 1.30741E-09 |
| WW | Friedman Aligned | 9.35998E-11 | 3.45599E-10 | 3.45599E-10 | 3.45599E-10 |
| WW | Quade | 1.15226E-03 | 1.15287E-03 | 1.15287E-03 | 1.15226E-03 |
| MABC | Friedman | 2.07209E-07 | 7.81020E-07 | 7.81020E-07 | 7.81020E-07 |
| MABC | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| MABC | Quade | 8.81588E-02 | 3.39358E-01 | 3.39358E-01 | 2.93802E-01 |
| IJAYA | Friedman | 2.51710E-06 | 9.29391E-06 | 9.29391E-06 | 9.29387E-06 |
| IJAYA | Friedman Aligned | 3.03666E-10 | 1.05115E-09 | 1.05115E-09 | 1.05115E-09 |
| IJAYA | Quade | 1.47660E-01 | 5.61846E-01 | 4.88755E-01 | 4.45628E-01 |
| **Table S65** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| DE | Friedman | 3.59231E-06 | 1.24349E-05 | 1.24349E-05 | 1.24349E-05 |
| DE | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| DE | Quade | 1.47660E-01 | 5.61846E-01 | 4.88755E-01 | 4.45628E-01 |
| NDE | Friedman | 2.32779E-02 | 7.18185E-02 | 7.18185E-02 | 6.99073E-02 |
| NDE | Friedman Aligned | 3.36822E-05 | 1.03638E-04 | 1.03638E-04 | 1.03634E-04 |
| NDE | Quade | 5.01560E-01 | 1.0 | 1.0 | 8.82625E-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 S66.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (GOTLBO is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 5.37814E-04 | 5.37948E-04 | 5.37948E-04 | 5.37814E-04 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 8.88379E-01 | 1.0 | 1.0 | 8.88379E-01 |
| PSO | Friedman | 2.44230E-01 | 5.05979E-01 | 5.05979E-01 | 4.03667E-01 |
| PSO | Friedman Aligned | 1.12035E-10 | 2.06835E-10 | 2.06835E-10 | 2.06835E-10 |
| PSO | Quade | 9.77652E-01 | 1.0 | 1.0 | 9.99104E-01 |
| CWOA | Friedman | 4.83801E-01 | 1.0 | 1.0 | 8.13363E-01 |
| CWOA | Friedman Aligned | 7.28206E-09 | 1.84852E-08 | 1.84852E-08 | 1.84852E-08 |
| CWOA | Quade | 9.79642E-01 | 1.0 | 1.0 | 9.99949E-01 |
| NNA | Friedman | 5.92700E-01 | 1.0 | 1.0 | 9.36943E-01 |
| NNA | Friedman Aligned | 6.56552E-05 | 2.02020E-04 | 2.02020E-04 | 2.02002E-04 |
| NNA | Quade | 9.79642E-01 | 1.0 | 1.0 | 9.99984E-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 |
| **Table S66** (*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 |
| 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 |

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| --- | --- | --- | --- | --- | --- |
| **Table S67.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (STLBO is the control algorithm, *n*2 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 | 1.65138E-03 | 3.05083E-03 | 3.05083E-03 | 3.04656E-03 |
| ISCA | Friedman | 1.24123E-13 | 2.29150E-13 | 2.29150E-13 | 2.29150E-13 |
| ISCA | Friedman Aligned | 1.77441E-10 | 6.55168E-10 | 6.55168E-10 | 6.55168E-10 |
| ISCA | Quade | 1.90410E-02 | 7.06693E-02 | 7.06693E-02 | 6.85226E-02 |
| GOTLBO | Friedman | 1.37420E-11 | 3.48837E-11 | 3.48837E-11 | 3.48837E-11 |
| GOTLBO | Friedman Aligned | 1.87348E-10 | 7.06158E-10 | 7.06158E-10 | 7.06158E-10 |
| GOTLBO | Quade | 9.97190E-03 | 3.46246E-02 | 3.46246E-02 | 3.40965E-02 |
| MABC | Friedman | 5.56843E-11 | 1.71336E-10 | 1.71336E-10 | 1.71336E-10 |
| MABC | Friedman Aligned | 5.46148E-11 | 1.68046E-10 | 1.68046E-10 | 1.68046E-10 |
| MABC | Quade | 3.31985E-02 | 1.26107E-01 | 1.26107E-01 | 1.19493E-01 |
| IJAYA | Friedman | 1.20599E-09 | 4.17460E-09 | 4.17460E-09 | 4.17460E-09 |
| IJAYA | Friedman Aligned | 5.75403E-09 | 1.99178E-08 | 1.99178E-08 | 1.99178E-08 |
| IJAYA | Quade | 6.19298E-02 | 2.31468E-01 | 2.02790E-01 | 2.10260E-01 |
| DE | Friedman | 1.83414E-09 | 6.77223E-09 | 6.77223E-09 | 6.77223E-09 |
| DE | Friedman Aligned | 3.00876E-09 | 1.11092E-08 | 1.11092E-08 | 1.11092E-08 |
| DE | Quade | 6.19298E-02 | 2.31468E-01 | 2.02790E-01 | 2.10260E-01 |
| NNA | Friedman | 1.98348E-09 | 7.47618E-09 | 7.47618E-09 | 7.47618E-09 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 2.93233E-03 | 9.03172E-03 | 9.03172E-03 | 8.99510E-03 |
| CWOA | Friedman | 5.60543E-09 | 2.06970E-08 | 2.06949E-08 | 2.06970E-08 |
| CWOA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| CWOA | Quade | 2.66069E-03 | 6.76098E-03 | 6.76098E-03 | 6.74024E-03 |
| **Table S67** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 5.97853E-09 | 2.06970E-08 | 2.06949E-08 | 2.06970E-08 |
| WW | Friedman Aligned | 1.45939E-10 | 5.05172E-10 | 5.05172E-10 | 5.05172E-10 |
| WW | Quade | 2.10491E-04 | 2.10511E-04 | 2.10511E-04 | 2.10491E-04 |
| NDE | Friedman | 1.87474E-04 | 5.76856E-04 | 5.76856E-04 | 5.76731E-04 |
| NDE | Friedman Aligned | 4.36010E-08 | 1.34157E-07 | 1.34157E-07 | 1.34157E-07 |
| NDE | Quade | 2.84587E-01 | 9.08417E-01 | 9.08417E-01 | 6.43152E-01 |
| TLBO | Friedman | 1.76463E-01 | 4.54482E-01 | 4.54482E-01 | 3.89108E-01 |
| TLBO | Friedman Aligned | 2.17176E-01 | 5.61378E-01 | 5.61378E-01 | 4.62882E-01 |
| TLBO | Quade | 7.54166E-01 | 1.0 | 1.0 | 9.71610E-01 |
| EBLSHADE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| EBLSHADE | Friedman Aligned | 6.46794E-01 | 1.0 | 1.0 | 8.53584E-01 |
| 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 |

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| --- | --- | --- | --- | --- | --- |
| **Table S68.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (PSO is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 4.01067E-01 | 5.02631E-01 | 5.02631E-01 | 4.01067E-01 |
| WW | Friedman Aligned | 2.83462E-12 | 2.83462E-12 | 2.83462E-12 | 2.83462E-12 |
| WW | Quade | 9.99914E-01 | 1.0 | 1.0 | 9.99914E-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 S68** (*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 |
| 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 |

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| --- | --- | --- | --- | --- | --- |
| **Table S69.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (IJAYA is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 7.43248E-10 | 7.43248E-10 | 7.43248E-10 | 7.43248E-10 |
| WW | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| WW | Quade | 2.66782E-01 | 3.06638E-01 | 3.06638E-01 | 2.66782E-01 |
| PSO | Friedman | 4.54207E-05 | 8.38553E-05 | 8.38553E-05 | 8.38520E-05 |
| PSO | Friedman Aligned | 1.35070E-10 | 5.09112E-10 | 5.09112E-10 | 5.09112E-10 |
| PSO | Quade | 5.22216E-01 | 1.0 | 1.0 | 7.44252E-01 |
| CWOA | Friedman | 3.64540E-04 | 9.25501E-04 | 9.25501E-04 | 9.25112E-04 |
| CWOA | Friedman Aligned | 5.32651E-11 | 1.96671E-10 | 1.96671E-10 | 1.96671E-10 |
| CWOA | Quade | 5.50483E-01 | 1.0 | 1.0 | 8.68626E-01 |
| NNA | Friedman | 9.08440E-04 | 2.79608E-03 | 2.79608E-03 | 2.79256E-03 |
| NNA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| NNA | Quade | 5.50483E-01 | 1.0 | 1.0 | 8.97503E-01 |
| GOTLBO | Friedman | 3.55101E-02 | 1.24289E-01 | 1.24289E-01 | 1.17640E-01 |
| GOTLBO | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| GOTLBO | Quade | 7.34526E-01 | 1.0 | 1.0 | 9.89856E-01 |
| ISCA | Friedman | 1.84143E-01 | 7.17234E-01 | 7.17234E-01 | 5.28316E-01 |
| ISCA | Friedman Aligned | <1E-13 | <1E-13 | <1E-13 | <1E-13 |
| ISCA | Quade | 8.38066E-01 | 1.0 | 1.0 | 9.98796E-01 |
| MABC | Friedman | 8.30669E-01 | 1.0 | 1.0 | 9.98761E-01 |
| MABC | Friedman Aligned | 1.20936E-11 | 4.18625E-11 | 4.18625E-11 | 4.18625E-11 |
| MABC | Quade | 9.24393E-01 | 1.0 | 1.0 | 9.99941E-01 |
| DE | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| DE | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| DE | Quade | 9.98735E-01 | 1.0 | 1.0 | 1.0 |
| **Table S69** (*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 S70.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (ISCA is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 1.49117E-05 | 1.49118E-05 | 1.49118E-05 | 1.49117E-05 |
| WW | Friedman Aligned | 1.07945E-10 | 1.99283E-10 | 1.99283E-10 | 1.99283E-10 |
| WW | Quade | 7.08152E-01 | 1.0 | 1.0 | 7.08152E-01 |
| PSO | Friedman | 3.30715E-02 | 6.19271E-02 | 6.19271E-02 | 6.01993E-02 |
| PSO | Friedman Aligned | 5.28264E-09 | 1.62543E-08 | 1.62543E-08 | 1.62543E-08 |
| PSO | Quade | 9.00243E-01 | 1.0 | 1.0 | 9.85813E-01 |
| CWOA | Friedman | 1.05547E-01 | 2.79535E-01 | 2.79535E-01 | 2.46592E-01 |
| CWOA | Friedman Aligned | 4.87572E-10 | 1.23768E-09 | 1.23768E-09 | 1.23768E-09 |
| CWOA | Quade | 9.05533E-01 | 1.0 | 1.0 | 9.97495E-01 |
| NNA | Friedman | 1.61730E-01 | 5.28346E-01 | 5.28346E-01 | 4.18890E-01 |
| NNA | Friedman Aligned | 4.82059E-13 | 4.82059E-13 | 4.82059E-13 | 4.82059E-13 |
| NNA | Quade | 9.05533E-01 | 1.0 | 1.0 | 9.98649E-01 |
| GOTLBO | Friedman | 7.82941E-01 | 1.0 | 1.0 | 9.94947E-01 |
| GOTLBO | Friedman Aligned | 2.23133E-03 | 7.72913E-03 | 7.72913E-03 | 7.70263E-03 |
| GOTLBO | Quade | 9.81758E-01 | 1.0 | 1.0 | 9.99999E-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 S70** (*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 | 1.0 | 1.0 | 1.0 | 1.0 |
| IJAYA | Quade | 1.0 | 1.0 | 1.0 | 1.0 |

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| --- | --- | --- | --- | --- | --- |
| **Table S71.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (NNA is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 4.34105E-02 | 4.43053E-02 | 4.43053E-02 | 4.34105E-02 |
| WW | Friedman Aligned | 1.25781E-08 | 1.25781E-08 | 1.25781E-08 | 1.25781E-08 |
| WW | Quade | 9.93459E-01 | 1.0 | 1.0 | 9.93459E-01 |
| PSO | Friedman | 9.59537E-01 | 1.0 | 1.0 | 9.97318E-01 |
| PSO | Friedman Aligned | 1.41924E-05 | 2.62016E-05 | 2.62016E-05 | 2.62013E-05 |
| PSO | Quade | 9.99820E-01 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman | 9.98121E-01 | 1.0 | 1.0 | 1.0 |
| CWOA | Friedman Aligned | 2.92359E-01 | 8.43733E-01 | 8.43733E-01 | 5.84323E-01 |
| CWOA | Quade | 9.99978E-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 |
| 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 S71** (*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 |
| 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 S72.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (CWOA is the control algorithm, *n*2 evaluation task). | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| WW | Friedman | 1.05634E-01 | 1.11163E-01 | 1.11163E-01 | 1.05634E-01 |
| WW | Friedman Aligned | 7.79425E-08 | 7.79425E-08 | 7.79425E-08 | 7.79425E-08 |
| WW | Quade | 9.97790E-01 | 1.0 | 1.0 | 9.97790E-01 |
| PSO | Friedman | 9.96116E-01 | 1.0 | 1.0 | 9.99965E-01 |
| PSO | Friedman Aligned | 1.94787E-02 | 3.62606E-02 | 3.62606E-02 | 3.56640E-02 |
| PSO | Quade | 9.99983E-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 |
| 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 S72** (*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 |
| 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 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S73.** Adjusted *p*-values for multiple comparisons 1×*N* tests in single-IV case (WW is the control algorithm, *n*2 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 S73** (*continued*) | | | | | |
| Algorithm | Test | post-hoc procedure | | | |
| Finner | Holm | Hochberg | Holland |
| PSO | Friedman | 1.0 | 1.0 | 1.0 | 1.0 |
| PSO | Friedman Aligned | 1.0 | 1.0 | 1.0 | 1.0 |
| PSO | 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 |
| 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 |