**Statistical Note  
VERSION 66**

**Author: Atanu Giri**

A repeated measures analysis of variance (ANOVA) was conducted using the MATLAB ranova function to examine the effects of within-subject factors, such as sucrose concentration, and between-subject factors, including gender and experimental conditions (baseline vs. food deprivation). To assess the between-subject differences, a two-sample Kolmogorov-Smirnov test was employed with the MATLAB kstest2 function. Additionally, pairwise comparisons were conducted to further explore the differences between groups using a post-hoc analysis, specifically the Tukey's honestly significant difference method, implemented with the MATLAB multcompare function.

**Figure 2.**

**2.a)** Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 11).  
P-value for concentration: 7.3397e-26.  
P-value for gender: 6.3880e-02.

kstest2 results: h=0, p=8.2894e-02, ks2stat=0.2557 (complementary to ranova)

Post-hoc analysis:

0.5%: 5.9941e-01

2%: 2.0283e-02

5%: 1.0142e-01

9%: 5.3385e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.3032, ks2stat=0.3788

RStest: Conc 1: h=0, p=0.4049, zval=0.8329

KStest2: Conc 2: h=1, p=0.0087, ks2stat=0.6439

RStest: Conc 2: h=1, p=0.0187, zval=2.3510

KStest2: Conc 3: h=0, p=0.2812, ks2stat=0.3864

RStest: Conc 3: h=0, p=0.1314, zval=1.5086

KStest2: Conc 4: h=0, p=0.9465, ks2stat=0.2045

RStest: Conc 4: h=0, p=0.5156, zval=-0.6501

**2.b)** Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 9).  
P-value for concentration: 5.4462e-08.  
P-value for gender: 8.1709e-02.

kstest2 results: h=0, p=8.4033e-01, ks2stat=0.1319 (complementary to ranova)

Post-hoc analysis:

0.5%: 5.5135e-02

2%: 7.7089e-03

5%: 8.6296e-01

9%: 4.4345e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.1028, ks2stat=0.5000

RStest: Conc 1: h=0, p=0.0590

KStest2: Conc 2: h=1, p=0.0102, ks2stat=0.6667

RStest: Conc 2: h=1, p=0.0142

KStest2: Conc 3: h=0, p=0.4213, ks2stat=0.3611

RStest: Conc 3: h=0, p=0.8036

KStest2: Conc 4: h=0, p=0.6366, ks2stat=0.3056

RStest: Conc 4: h=0, p=0.8590

2.d) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 11).  
P-value for concentration: 7.8859e-04.  
P-value for gender: 4.3484e-01.

kstest2 results: h=0, p=3.1096e-01, ks2stat=0.1986 (complementary to ranova)

Post-hoc analysis:

0.5%: 8.9816e-01

2%: 4.5069e-01

5%: 5.3396e-01

9%: 5.9227e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.7358, ks2stat=0.2727

RStest: Conc 1: h=0, p=0.6458, zval=-0.4597

KStest2: Conc 2: h=0, p=0.4896, ks2stat=0.3333

RStest: Conc 2: h=0, p=0.6682, zval=-0.4286

KStest2: Conc 3: h=0, p=0.8286, ks2stat=0.2500

RStest: Conc 3: h=0, p=0.7169, zval=-0.3627

KStest2: Conc 4: h=0, p=0.7136, ks2stat=0.2727

RStest: Conc 4: h=0, p=0.7350, zval=-0.3385

2.e) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 11).  
P-value for concentration: 8.9008e-02.  
P-value for gender: 2.4720e-03.

kstest2 results: h=1, p=9.4199e-06, ks2stat=0.5019 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.2707e-03

2%: 1.1033e-02

5%: 3.5299e-03

9%: 8.9459e-03

KStest2 and wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0258, ks2stat=0.5758

RStest: Conc 1: h=1, p=0.0051, zval=2.8003

KStest2: Conc 2: h=1, p=0.0361, ks2stat=0.5530

RStest: Conc 2: h=1, p=0.0151, zval=2.4311

KStest2: Conc 3: h=1, p=0.0230, ks2stat=0.5833

RStest: Conc 3: h=1, p=0.0051, zval=2.8003

KStest2: Conc 4: h=1, p=0.0361, ks2stat=0.5530

RStest: Conc 4: h=1, p=0.0062, zval=2.7388

2.f) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 11).  
P-value for concentration: 9.8312e-01  
P-value for gender: 1.5572e-01

kstest2 results: h=1, p=2.5533e-05, ks2stat=0.4811 (complementary to ranova)

Post-hoc analysis:

0.5%: 7.9690e-02

2%: 2.5673e-01

5%: 1.4691e-01

9%: 2.0322e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0067, ks2stat=0.6591

RStest: Conc 1: h=1, p=0.0028, zval=-2.9850

KStest2: Conc 2: h=0, p=0.2604, ks2stat=0.3939

RStest: Conc 2: h=0, p=0.1029, zval=-1.6310

KStest2: Conc 3: h=1, p=0.0323, ks2stat=0.5606

RStest: Conc 3: h=1, p=0.0289, zval=-2.1849

KStest2: Conc 4: h=0, p=0.0915, ks2stat=0.4848

RStest: Conc 4: h=0, p=0.0905, zval=-1.6925

2.g) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 11).  
P-value for concentration: 2.6239e-10.  
P-value for gender: 1.7542e-03.

kstest2 results: h=1, p=3.0470e-05, ks2stat=0.4773 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.6629e-04

2%: 2.5835e-03

5%: 5.1037e-03

9%: 6.0776e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0003, ks2stat=0.8258

RStest: Conc 1: h=1, p=0.0006, zval=-3.4158

KStest2: Conc 2: h=1, p=0.0059, ks2stat=0.6667

RStest: Conc 2: h=1, p=0.0042, zval=-2.8619

KStest2: Conc 3: h=1, p=0.0323, ks2stat=0.5606

RStest: Conc 3: h=1, p=0.0106, zval=-2.5541

KStest2: Conc 4: h=0, p=0.1213, ks2stat=0.4621

RStest: Conc 4: h=0, p=0.1481, zval=-1.4463

2.h) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 11).  
P-value for concentration: 3.0392e-07.  
P-value for gender: 2.3301e-01.

kstest2 results: h=0, p=3.3508e-01, ks2stat=0.1913 (complementary to ranova)

Post-hoc analysis:

0.5%: 2.6980e-01

2%: 7.5679e-01

5%: 8.5789e-02

9%: 3.0110e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.8067, ks2stat=0.2500

RStest: Conc 1: h=0, p=0.4044, zval=0.8338

KStest2: Conc 2: h=0, p=0.9982, ks2stat=0.1515

RStest: Conc 2: h=0, p=0.8292, zval=0.2157

KStest2: Conc 3: h=0, p=0.1006, ks2stat=0.4773

RStest: Conc 3: h=1, p=0.0483, zval=1.9743

KStest2: Conc 4: h=0, p=0.4595, ks2stat=0.3333

RStest: Conc 4: h=0, p=0.4219, zval=0.8031

**Figure 3.**

3.e) Statistical significance was determined by one-way analysis of variance. (group 1 = 60, group 2 = 61, group 3 = 58, group 4 = 64, group 5 = 22, group 6 = 22, group 7 = 25, group 8 = 18)

P-value for significance of difference between the groups (utility): 0.0429.

Post-hoc analysis by Tukey’s HSD method:

No group difference is statistically significant.

3.f) Statistical significance was determined by one-way analysis of variance. (group 1 = 60, group 2 = 61, group 3 = 58, group 4 = 64)

P-value for significance of difference between the groups (concentration): 0.9599.

Post-hoc analysis by Tukey’s HSD method:

No group difference is statistically significant.

3.g) Statistical significance was determined by one-way analysis of variance. (group 1 = 22, group 2 = 22, group 3 = 25, group 4 = 18)

P-value for significance of difference between the groups (concentration): 0.5523.

Post-hoc analysis by Tukey’s HSD method:

No group difference is statistically significant.

3.h) Statistical significance was determined by one-way analysis of variance. (group 1 = 243, group 2 = 87)

P-value for significance of difference between the groups (concentration): 0.0012.

**Figure 5.**

5.a) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 22, FD N = 22).  
P-value for concentration: 1.0842e-55  
P-value for BL vs FD: 8.0411e-05.

kstest2 results: h=1, p=1.0816e-02, ks2stat=0.2386 (complementary to ranova)

Post-hoc analysis:

0.5%: 6.8154e-01

2%: 5.2118e-01

5%: 5.0500e-04

9%: 4.8848e-03

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.1746, ks2stat=0.3182

RStest: Conc 1: h=0, p=0.3038, zval=1.0283

KStest2: Conc 2: h=0, p=0.3320, ks2stat=0.2727

RStest: Conc 2: h=0, p=0.3820, zval=0.8743

KStest2: Conc 3: h=1, p=0.0138, ks2stat=0.4545

RStest: Conc 3: h=1, p=0.0011, zval=-3.2659

KStest2: Conc 4: h=1, p=0.0000, ks2stat=0.6818

RStest: Conc 4: h=1, p=0.0003, zval=-3.6583

5.b) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 12, FD N = 9).  
P-value for concentration: 1.3979e-09  
P-value for BL vs FD: 4.2358e-01.

kstest2 results: h=0, p=1.0000e+00, ks2stat=0.0556 (complementary to ranova)

Post-hoc analysis:

0.5%: 4.2051e-01

2%: 1.2090e-02

5%: 8.9340e-01

9%: 8.4742e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.7495, ks2stat=0.2778

RStest: Conc 1: h=0, p=0.5274

KStest2: Conc 2: h=1, p=0.0065, ks2stat=0.6944

RStest: Conc 2: h=1, p=0.0034

KStest2: Conc 3: h=0, p=0.1417, ks2stat=0.4722

RStest: Conc 3: h=0, p=0.5421

KStest2: Conc 4: h=0, p=0.1915, ks2stat=0.4444

RStest: Conc 4: h=0, p=0.2015

5.c) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 22, FD N = 22).  
P-value for concentration: 6.3645e-10.  
P-value for BL vs FD: 1.9462e-01.

kstest2 results: h=0, p=3.5436e-01, ks2stat=0.1435 (complementary to ranova)

Post-hoc analysis:  
0.5%: 1.0418e-02

2%: 3.2611e-01

5%: 7.3375e-01

9%: 1.0336e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.0647, ks2stat=0.4286

RStest: Conc 1: h=1, p=0.0127, zval=-2.4921

KStest2: Conc 2: h=1, p=0.0395, ks2stat=0.4286

RStest: Conc 2: h=0, p=0.0883, zval=-1.7044

KStest2: Conc 3: h=0, p=0.7388, ks2stat=0.1991

RStest: Conc 3: h=0, p=0.6885, zval=0.4009

KStest2: Conc 4: h=0, p=0.3320, ks2stat=0.2727

RStest: Conc 4: h=0, p=0.1625, zval=1.3966

5.d) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 22, FD N = 22).  
P-value for concentration: 2.8777e-07.  
P-value for BL vs FD: 1.6989e-03

kstest2 results: h=1, p=7.5537e-08, ks2stat=0.4318 (complementary to ranova)

Post-hoc analysis:  
0.5%: 3.7073e-04

2%: 7.5759e-04

5%: 3.3233e-02

9%: 1.3234e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0015, ks2stat=0.5455

RStest: Conc 1: h=1, p=0.0008, zval=-3.3683

KStest2: Conc 2: h=1, p=0.0356, ks2stat=0.4091

RStest: Conc 2: h=1, p=0.0028, zval=-2.9928

KStest2: Conc 3: h=1, p=0.0138, ks2stat=0.4545

RStest: Conc 3: h=1, p=0.0151, zval=-2.4294

KStest2: Conc 4: h=1, p=0.0356, ks2stat=0.4091

RStest: Conc 4: h=1, p=0.0151, zval=-2.4294

5.e) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 22, FD N = 22).  
P-value for concentration: 2.7791e-01.  
P-value for BL vs FD: 4.3141e-02

kstest2 results: h=1, p=7.5537e-08, ks2stat=0.4318 (complementary to ranova)

Post-hoc analysis:  
0.5%: 3.9999e-02

2%: 3.3272e-02

5%: 5.5036e-02

9%: 5.9155e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0001, ks2stat=0.6364

RStest: Conc 1: h=1, p=0.0003, zval=3.6265

KStest2: Conc 2: h=1, p=0.0138, ks2stat=0.4545

RStest: Conc 2: h=1, p=0.0028, zval=2.9928

KStest2: Conc 3: h=0, p=0.0828, ks2stat=0.3636

RStest: Conc 3: h=1, p=0.0109, zval=2.5468

KStest2: Conc 4: h=1, p=0.0138, ks2stat=0.4545

RStest: Conc 4: h=1, p=0.0032, zval=2.9458

5.f) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 22, FD N = 22).  
P-value for concentration: 6.6926e-20  
P-value for BL vs FD: 2.4891e-02

kstest2 results: h=1, p=1.0816e-02, ks2stat=0.2386 (Complementary to ranova)

Post-hoc analysis:  
0.5%: 7.3584e-04

2%: 1.0250e-01

5%: 2.0052e-01

9%: 1.2278e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0015, ks2stat=0.5455

RStest: Conc 1: h=1, p=0.0012, zval=3.2275

KStest2: Conc 2: h=0, p=0.0828, ks2stat=0.3636

RStest: Conc 2: h=0, p=0.0689, zval=1.8191

KStest2: Conc 3: h=0, p=0.3320, ks2stat=0.2727

RStest: Conc 3: h=0, p=0.4455, zval=0.7629

KStest2: Conc 4: h=0, p=0.1746, ks2stat=0.3182

RStest: Conc 4: h=0, p=0.1424, zval=1.4670

5.g) Statistical significance was determined by Repeated measures analysis of variance. (BL N = 22, FD N = 22).  
P-value for concentration: 8.1104e-22  
P-value for BL vs FD: 1.2044e-01

kstest2 results: h=1, p=1.7572e-02, ks2stat=0.2273 (Complementary to ranova)

Post-hoc analysis:  
0.5%: 5.6817e-03

2%: 1.9624e-02

5%: 5.4119e-01

9%: 7.4789e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0049, ks2stat=0.5000

RStest: Conc 1: h=1, p=0.0068, zval=-2.7047

KStest2: Conc 2: h=1, p=0.0356, ks2stat=0.4091

RStest: Conc 2: h=1, p=0.0186, zval=-2.3536

KStest2: Conc 3: h=0, p=0.3320, ks2stat=0.2727

RStest: Conc 3: h=0, p=0.2485, zval=1.1541

KStest2: Conc 4: h=0, p=0.3320, ks2stat=0.2727

RStest: Conc 4: h=0, p=0.9156, zval=-0.1059

**Figure 6.**

6.b) **Left**

Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 2.5457e-16.  
P-value for gender: 4.7989e-01.

kstest2 results: h=0, p=8.0438e-01, ks2stat=0.1333 (complementary to ranova)

Post-hoc analysis:

0.5%: 8.0114e-01

2%: 8.8708e-01

5%: 5.7254e-01

9%: 5.0164e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.8848, ks2stat=0.2333

RStest: Conc 1: h=0, p=0.8621, zval=0.1736

KStest2: Conc 2: h=0, p=1.0000, ks2stat=0.1167

RStest: Conc 2: h=0, p=1.0000, zval=-0.0000

KStest2: Conc 3: h=0, p=0.9304, ks2stat=0.2167

RStest: Conc 3: h=0, p=0.9467, zval=0.0668

KStest2: Conc 4: h=0, p=0.8848, ks2stat=0.2333

RStest: Conc 4: h=0, p=1.0000, zval=-0.0000

**Right**

Statistical significance was determined by Repeated measures analysis of variance. (Female N = 10, Male N = 10).  
P-value for concentration: 6.1134e-18.  
P-value for gender: 2.4633e-02.

kstest2 results: h=0, p=3.6131e-01, ks2stat=0.2000 (complementary to ranova)

Post-hoc analysis:

0.5%: 8.8484e-01

2%: 1.0123e-01

5%: 7.5526e-02

9%: 3.3494e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.9748, ks2stat=0.2000

RStest: Conc 1: h=0, p=0.5004, zval=0.6739

KStest2: Conc 2: h=0, p=0.3129, ks2stat=0.4000

RStest: Conc 2: h=0, p=0.1315, zval=1.5083

KStest2: Conc 3: h=0, p=0.6751, ks2stat=0.3000

RStest: Conc 3: h=0, p=0.1233, zval=1.5411

KStest2: Conc 4: h=0, p=0.9748, ks2stat=0.2000

RStest: Conc 4: h=0, p=0.4201, zval=0.8062

6.c)

**After Alcohol Analysis:**

Statistical significance was determined by Repeated measures analysis of variance. (Female N = 10, Male N = 10).  
P-value for concentration: 3.374e-25.  
P-value for gender: 0.13625.

kstest2 results: h=0, p=1.0000e+00, ks2stat=0.0000 (complementary to ranova)

Post-hoc analysis:

0.5%: 8.1246e-01

2%: 8.0739e-01

5%: 1.3206e-01

9%: 3.5295e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.1108, ks2stat=0.5000

RStest: Conc 1: h=0, p=0.5648

KStest2: Conc 2: h=0, p=0.1108, ks2stat=0.5000

RStest: Conc 2: h=0, p=0.5648

KStest2: Conc 3: h=0, p=0.1108, ks2stat=0.5000

RStest: Conc 3: h=0, p=0.7882

KStest2: Conc 4: h=0, p=0.1108, ks2stat=0.5000

RStest: Conc 4: h=0, p=0.0713

**Before and After Alcohol Analysis of Female:**

Statistical significance was determined by Repeated measures analysis of variance. (Before Alcohol N = 12, After Alcohol N = 10).  
P-value for concentration: 6.4554e-17.  
P-value for before and after alcohol: 0.11585.

kstest2 results: h=0, p=9.8992e-01, ks2stat=0.0917 (complementary to ranova)

Post-hoc analysis:

0.5%: 6.8311e-04

2%: 3.1640e-03

5%: 2.8801e-01

9%: 1.8980e-05

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0017, ks2stat=0.7500

RStest: Conc 1: h=1, p=0.0016

KStest2: Conc 2: h=1, p=0.0076, ks2stat=0.6667

RStest: Conc 2: h=1, p=0.0059

KStest2: Conc 3: h=1, p=0.0282, ks2stat=0.5833

RStest: Conc 3: h=0, p=0.0789

KStest2: Conc 4: h=1, p=0.0001, ks2stat=0.9167

RStest: Conc 4: h=1, p=0.0002

**Before and After Alcohol Analysis of Male:**

Statistical significance was determined by Repeated measures analysis of variance. (Before Alcohol N = 12, After Alcohol N = 10).  
P-value for concentration: 3.6982e-15.  
P-value for before and after alcohol: 0.76845.

kstest2 results: h=0, p=1.0000e+00, ks2stat=0.0472 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.1779e-01

2%: 9.7611e-01

5%: 6.6111e-01

9%: 8.3969e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.1273, ks2stat=0.5000

RStest: Conc 1: h=0, p=0.0884

KStest2: Conc 2: h=0, p=0.5732, ks2stat=0.3333

RStest: Conc 2: h=0, p=0.9681

KStest2: Conc 3: h=0, p=0.2031, ks2stat=0.4556

RStest: Conc 3: h=0, p=0.7785

KStest2: Conc 4: h=0, p=0.0667, ks2stat=0.5556

RStest: Conc 4: h=0, p=0.0762

6.d) **Left**

Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 5.4017e-02.  
P-value for gender: 4.0729e-01.

kstest2 results: h=0, p=4.6263e-01, ks2stat=0.2016 (complementary to ranova)

Post-hoc analysis:

0.5%: 7.1363e-01

2%: 7.6787e-01

5%: 7.5464e-02

9%: 6.6465e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.2141, ks2stat=0.5000

RStest: Conc 1: h=0, p=0.3462

KStest2: Conc 2: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 2: h=0, p=0.3701

KStest2: Conc 3: h=1, p=0.0032, ks2stat=0.7167

RStest: Conc 3: h=1, p=0.0192

KStest2: Conc 4: h=0, p=0.2503, ks2stat=0.4545

RStest: Conc 4: h=0, p=0.5360

**Right**

Statistical significance was determined by Repeated measures analysis of variance. (Female N = 10, Male N = 10).  
P-value for concentration: 3.8602e-01.  
P-value for gender: 7.0494e-01.

kstest2 results: h=0, p=1.7336e-01, ks2stat=0.2745 (complementary to ranova)

Post-hoc analysis:

0.5%: 5.2868e-01

2%: 4.4209e-01

5%: 5.2319e-01

9%: 4.8906e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0204, ks2stat=0.8000

RStest: Conc 1: h=1, p=0.0303

KStest2: Conc 2: h=0, p=0.5070, ks2stat=0.4250

RStest: Conc 2: h=0, p=0.2844

KStest2: Conc 3: h=0, p=0.4892, ks2stat=0.3556

RStest: Conc 3: h=0, p=0.3562

KStest2: Conc 4: h=0, p=0.1076, ks2stat=0.5417

RStest: Conc 4: h=1, p=0.0274

6.e) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 5, Male N = 5).  
P-value for concentration: 4.1083e-02.  
P-value for gender: 8.2510e-01.

kstest2 results: h=0, p=7.7095e-01, ks2stat=0.2000 (complementary to ranova)

Post-hoc analysis:

0.5%: 8.0968e-01

2%: 2.1173e-01

5%: 4.2256e-01

9%: 2.2622e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 1: h=0, p=0.6429

KStest2: Conc 2: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 2: h=0, p=0.2063

KStest2: Conc 3: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 3: h=0, p=0.6349

KStest2: Conc 4: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 4: h=0, p=0.3016

6.f) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 5, Male N = 5).  
P-value for concentration: 8.1732e-01.  
P-value for gender: 1.2629e-01.

kstest2 results: h=1, p=8.1617e-03, ks2stat=0.5000 (complementary to ranova)

Post-hoc analysis:

0.5%: 2.1755e-01

2%: 9.1185e-02

5%: 1.8516e-01

9%: 9.4228e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 1: h=0, p=0.2222

KStest2: Conc 2: h=1, p=0.0361, ks2stat=0.8000

RStest: Conc 2: h=1, p=0.0317

KStest2: Conc 3: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 3: h=0, p=0.1508

KStest2: Conc 4: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 4: h=0, p=0.0952

6.g) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 6, Male N = 6).  
P-value for concentration: 2.6307e-07.  
P-value for gender: 6.6366e-01.

kstest2 results: h=0, p=6.2161e-01, ks2stat=0.2083 (complementary to ranova)

Post-hoc analysis:

0.5%: 7.5735e-01

2%: 3.7013e-01

5%: 8.0930e-01

9%: 6.4244e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 1: h=0, p=1.0000

KStest2: Conc 2: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 2: h=0, p=0.3095

KStest2: Conc 3: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 3: h=0, p=0.8182

KStest2: Conc 4: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 4: h=0, p=0.5887

6.h) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 6, Male N = 6).  
P-value for concentration: 4.2378e-01.  
P-value for gender: 3.0986e-01.

kstest2 results: h=1, p=9.3124e-04, ks2stat=0.5417 (complementary to ranova)

Post-hoc analysis:

0.5%: 3.2581e-01

2%: 3.9929e-01

5%: 2.7256e-01

9%: 2.6367e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.0766, ks2stat=0.6667

RStest: Conc 1: h=0, p=0.1320

KStest2: Conc 2: h=1, p=0.0122, ks2stat=0.8333

RStest: Conc 2: h=0, p=0.0649

KStest2: Conc 3: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 3: h=0, p=0.3095

KStest2: Conc 4: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 4: h=0, p=0.2403

6.k) Statistical significance was determined by one-way analysis of variance. (Female BL = 10, Male BL = 10, Female Oxy = 5, Male Oxy = 5, Female Incub = 6, Male Incub = 6, Female PA = 10, Male PA = 10)

P-value for significance of difference between the groups: 1.0469e-09.

Post-hoc analysis by Tukey’s HSD method:

Female BL and Male BL: 0.9981

Female BL and Female Oxy: 6.5947e-06

Female BL and Female Incub: 0.0132

Female BL and Female PA: 0.9993

Male BL and Male Oxy: 4.0017e-06

Male BL and Male Incub: 3.3984e-04

Male BL and Male PA: 0.3631

**Figure S2.**

S2.a) Statistical significance was determined by one-way analysis of variance. (N = 5).

P-value for light level: 0.0011.

S2.b) Statistical significance was determined by one-way analysis of variance. (N = 23).

P-value for light level: 0.0028.

**Figure S6.**

S6.a) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 4.3911e-30.  
P-value for gender: 1.5870e-01.

kstest2 results: h=0, p=9.3097e-01, ks2stat=0.1125 (complementary to ranova)

Post-hoc analysis:

0.5%: 7.8880e-01

2%: 2.2787e-01

5%: 2.6929e-01

9%: 7.6084e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.9636, ks2stat=0.2000

RStest: Conc 1: h=0, p=0.5631

KStest2: Conc 2: h=0, p=0.8286, ks2stat=0.2500

RStest: Conc 2: h=0, p=0.2840

KStest2: Conc 3: h=0, p=0.6961, ks2stat=0.2833

RStest: Conc 3: h=0, p=0.2892

KStest2: Conc 4: h=0, p=0.8848, ks2stat=0.2333

RStest: Conc 4: h=0, p=0.8391

S6.b) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 2.6791e-06.  
P-value for gender: 1.6014e-04.

kstest2 results: h=1, p=1.3139e-08, ks2stat=0.6375 (complementary to ranova)

Post-hoc analysis:

0.5%: 4.0070e-04

2%: 1.4910e-05

5%: 9.2678e-03

9%: 2.5464e-03

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0076, ks2stat=0.6667

RStest: Conc 1: h=1, p=0.0033

KStest2: Conc 2: h=1, p=0.0001, ks2stat=0.9167

RStest: Conc 2: h=1, p=0.0003

KStest2: Conc 3: h=0, p=0.0567, ks2stat=0.5333

RStest: Conc 3: h=1, p=0.0229

KStest2: Conc 4: h=1, p=0.0076, ks2stat=0.6667

RStest: Conc 4: h=1, p=0.0051

S6.c) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 1.1616e-02.  
P-value for gender: 7. 3997e-03.

kstest2 results: h=1, p=1.8518e-05, ks2stat=0.5000 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.8703e-02

2%: 4.5455e-04

5%: 2.3150e-01

9%: 1.1937e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0076, ks2stat=0.6667

RStest: Conc 1: h=1, p=0.0111

KStest2: Conc 2: h=1, p=0.0003, ks2stat=0.8333

RStest: Conc 2: h=1, p=0.0014

KStest2: Conc 3: h=0, p=0.2270, ks2stat=0.4167

RStest: Conc 3: h=0, p=0.4098

KStest2: Conc 4: h=1, p=0.0452, ks2stat=0.5500

RStest: Conc 4: h=1, p=0.0092

S6.d) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 7.6444e-13.  
P-value for gender: 2.4455e-02.

kstest2 results: h=1, p=6.8336e-03, ks2stat=0.3500 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.1326e-02

2%: 1.2677e-04

5%: 9.3261e-01

9%: 1.6538e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0358, ks2stat=0.5667

RStest: Conc 1: h=1, p=0.0111

KStest2: Conc 2: h=1, p=0.0001, ks2stat=0.9167

RStest: Conc 2: h=1, p=0.0003

KStest2: Conc 3: h=0, p=0.9989, ks2stat=0.1500

RStest: Conc 3: h=0, p=0.9212

KStest2: Conc 4: h=0, p=0.5564, ks2stat=0.3167

RStest: Conc 4: h=0, p=0.2485

S6.e) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 2.3011e-15.  
P-value for gender: 3.8916e-01.

kstest2 results: h=0, p=2.6677e-01, ks2stat=0.2083 (complementary to ranova)

Post-hoc analysis:

0.5%: 2.8309e-01

2%: 1.3761e-02

5%: 8.4288e-01

9%: 5.6653e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.4896, ks2stat=0.3333

RStest: Conc 1: h=0, p=0.3891

KStest2: Conc 2: h=0, p=0.0567, ks2stat=0.5333

RStest: Conc 2: h=1, p=0.0149

KStest2: Conc 3: h=0, p=0.9636, ks2stat=0.2000

RStest: Conc 3: h=0, p=0.8940

KStest2: Conc 4: h=0, p=0.3689, ks2stat=0.3667

RStest: Conc 4: h=0, p=0.5716

**Figure S7.**

S7.a) **Left**  
Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).  
P-value for concentration: 1.4050e-01.  
P-value for gender: 3.6754e-01.

kstest2 results: h=0, p=1.2139e-01, ks2stat=0.2458 (complementary to ranova)

Post-hoc analysis:

0.5%: 7.7450e-01

2%: 9.1269e-01

5%: 3.6064e-03

9%: 5.6181e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.9304, ks2stat=0.2167

RStest: Conc 1: h=0, p=0.7667

KStest2: Conc 2: h=0, p=0.8286, ks2stat=0.2500

RStest: Conc 2: h=0, p=0.7667

KStest2: Conc 3: h=1, p=0.0101, ks2stat=0.6500

RStest: Conc 3: h=1, p=0.0111

KStest2: Conc 4: h=0, p=0.1072, ks2stat=0.4833

RStest: Conc 4: h=0, p=0.3734

**Right**  
Statistical significance was determined by Repeated measures analysis of variance. (Female N = 10, Male N = 10).  
P-value for concentration: 6.8275e-01.  
P-value for gender: 1.9427e-01.

kstest2 results: h=0, p=1.3925e-01, ks2stat=0.2500 (complementary to ranova)

Post-hoc analysis:

0.5%: 4.4173e-01

2%: 1.5443e-01

5%: 4.3851e-01

9%: 8.8666e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.3129, ks2stat=0.4000

RStest: Conc 1: h=0, p=0.3075

KStest2: Conc 2: h=0, p=0.6751, ks2stat=0.3000

RStest: Conc 2: h=0, p=0.1620

KStest2: Conc 3: h=0, p=0.6751, ks2stat=0.3000

RStest: Conc 3: h=0, p=0.9698

KStest2: Conc 4: h=0, p=0.1108, ks2stat=0.5000

RStest: Conc 4: h=0, p=0.0890

S7.b) **Left**  
Statistical significance was determined by Repeated measures analysis of variance. (Female N = 12, Male N = 10).

P-value for concentration: 7.3371e-02.  
P-value for gender: 4.0968e-04.

kstest2 results: h=1, p=2.4759e-06, ks2stat=0.5417 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.2714e-02

2%: 5.9126e-02

5%: 8.5187e-04

9%: 1.1225e-03

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0220, ks2stat=0.6000

RStest: Conc 1: h=1, p=0.0092

KStest2: Conc 2: h=0, p=0.0567, ks2stat=0.5333

RStest: Conc 2: h=0, p=0.0806

KStest2: Conc 3: h=1, p=0.0076, ks2stat=0.6667

RStest: Conc 3: h=1, p=0.0022

KStest2: Conc 4: h=1, p=0.0076, ks2stat=0.6667

RStest: Conc 4: h=1, p=0.0041

**Right**  
Statistical significance was determined by Repeated measures analysis of variance. (Female N = 10, Male N = 10).  
P-value for concentration: 5.5161e-01.  
P-value for gender: 4.4971e-02.

kstest2 results: h=1, p=1.0793e-02, ks2stat=0.3500 (complementary to ranova)

Post-hoc analysis:

0.5%: 9.3255e-02

2%: 8.9902e-02

5%: 5.4953e-01

9%: 6.7305e-03

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0310, ks2stat=0.6000

RStest: Conc 1: h=0, p=0.0890

KStest2: Conc 2: h=0, p=0.3129, ks2stat=0.4000

RStest: Conc 2: h=0, p=0.1212

KStest2: Conc 3: h=0, p=0.3129, ks2stat=0.4000

RStest: Conc 3: h=0, p=0.6232

KStest2: Conc 4: h=1, p=0.0069, ks2stat=0.7000

RStest: Conc 4: h=1, p=0.0113

S7.d) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 5, Male N = 5).  
P-value for concentration: 8.7784e-02.  
P-value for gender: 3.1525e-02.

kstest2 results: h=1, p=2.3213e-02, ks2stat=0.4500 (complementary to ranova)

Post-hoc analysis:

0.5%: 3.1246e-03

2%: 5.8901e-01

5%: 3.6169e-02

9%: 9.2633e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=1, p=0.0038, ks2stat=1.0000

RStest: Conc 1: h=1, p=0.0079

KStest2: Conc 2: h=0, p=0.9996, ks2stat=0.2000

RStest: Conc 2: h=0, p=0.6905

KStest2: Conc 3: h=1, p=0.0361, ks2stat=0.8000

RStest: Conc 3: h=0, p=0.0556

KStest2: Conc 4: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 4: h=0, p=1.0000

S7.e) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 5, Male N = 5).  
P-value for concentration: 6.8473e-01.  
P-value for gender: 1.5292e-01.

kstest2 results: h=1, p=2.3213e-02, ks2stat=0.4500 (complementary to ranova)

Post-hoc analysis:

0.5%: 3.2600e-01

2%: 1.2515e-01

5%: 3.5598e-01

9%: 1.0995e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 1: h=0, p=0.3095

KStest2: Conc 2: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 2: h=0, p=0.2222

KStest2: Conc 3: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 3: h=0, p=0.3968

KStest2: Conc 4: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 4: h=0, p=0.2222

S7.f) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 5, Male N = 5).  
P-value for concentration: 6.2169e-01.  
P-value for gender: 8.7263e-02.

kstest2 results: h=1, p=8.1617e-03, ks2stat=0.5000 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.9249e-01

2%: 1.3288e-01

5%: 5.9820e-02

9%: 5.9578e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 1: h=0, p=0.2222

KStest2: Conc 2: h=0, p=0.6974, ks2stat=0.4000

RStest: Conc 2: h=0, p=0.2222

KStest2: Conc 3: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 3: h=0, p=0.0952

KStest2: Conc 4: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 4: h=0, p=0.0952

S7.g) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 5, Male N = 5).  
P-value for concentration: 4.5703e-01.  
P-value for gender: 6.3326e-02.

kstest2 results: h=1, p=7.2529e-04, ks2stat=0.6000 (complementary to ranova)

Post-hoc analysis:

0.5%: 1.7344e-01

2%: 9.6526e-02

5%: 5.1225e-02

9%: 4.6853e-02

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 1: h=0, p=0.2222

KStest2: Conc 2: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 2: h=0, p=0.0952

KStest2: Conc 3: h=1, p=0.0361, ks2stat=0.8000

RStest: Conc 3: h=0, p=0.0556

KStest2: Conc 4: h=0, p=0.2090, ks2stat=0.6000

RStest: Conc 4: h=0, p=0.0952

S7.h) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 6, Male N = 6).  
P-value for concentration: 3.0232e-04.  
P-value for gender: 4.9003e-01.

kstest2 results: h=0, p=8.6076e-01, ks2stat=0.1667 (complementary to ranova)

Post-hoc analysis:

0.5%: 6.9253e-01

2%: 6.3994e-01

5%: 6.0961e-01

9%: 7.4470e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 1: h=0, p=0.5887

KStest2: Conc 2: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 2: h=0, p=0.6991

KStest2: Conc 3: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 3: h=0, p=0.4848

KStest2: Conc 4: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 4: h=0, p=0.8182

S7.i) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 6, Male N = 6).  
P-value for concentration: 1.1029e-03.  
P-value for gender: 3.4076e-01.

kstest2 results: h=0, p=5.0588e-02, ks2stat=0.3750 (complementary to ranova)

Post-hoc analysis:

0.5%: 5.1260e-01

2%: 3.1392e-01

5%: 2.5092e-01

9%: 3.6439e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=1.0000, ks2stat=0.1667

RStest: Conc 1: h=0, p=0.8182

KStest2: Conc 2: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 2: h=0, p=0.2403

KStest2: Conc 3: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 3: h=0, p=0.1797

KStest2: Conc 4: h=1, p=0.0122, ks2stat=0.8333

RStest: Conc 4: h=1, p=0.0411

S7.j) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 6, Male N = 6).  
P-value for concentration: 1.8477e-06.  
P-value for gender: 3.2473e-01.

kstest2 results: h=0, p=2.1598e-01, ks2stat=0.2917 (complementary to ranova)

Post-hoc analysis:

0.5%: 4.5320e-01

2%: 4.5178e-01

5%: 3.0428e-01

9%: 2.1404e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 1: h=0, p=0.4848

KStest2: Conc 2: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 2: h=0, p=0.4848

KStest2: Conc 3: h=0, p=0.0766, ks2stat=0.6667

RStest: Conc 3: h=0, p=0.3939

KStest2: Conc 4: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 4: h=0, p=0.2403

S7.k) Statistical significance was determined by Repeated measures analysis of variance. (Female N = 6, Male N = 6).  
P-value for concentration: 5.9005e-04.  
P-value for gender: 1.4048e-01.

kstest2 results: h=0, p=2.1598e-01, ks2stat=0.2917 (complementary to ranova)

Post-hoc analysis:

0.5%: 3.2825e-01

2%: 4.1626e-01

5%: 5.1375e-02

9%: 3.6430e-01

KStest2 and Wilcoxon rank sum test Results (complementary to post-hoc analysis)

KStest2: Conc 1: h=0, p=0.3180, ks2stat=0.5000

RStest: Conc 1: h=0, p=0.3939

KStest2: Conc 2: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 2: h=0, p=0.5887

KStest2: Conc 3: h=0, p=0.0766, ks2stat=0.6667

RStest: Conc 3: h=0, p=0.0649

KStest2: Conc 4: h=0, p=0.8096, ks2stat=0.3333

RStest: Conc 4: h=0, p=0.4848