**ANOVA on reach data before aiming trials and at the end**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 Experiment 2 89 5.7845502 4.346925e-03 \* 0.074718061

3 Time 1 89 22.2127470 8.961373e-06 \* 0.086372268

4 Experiment:Time 2 89 0.9486041 3.911615e-01 0.008009864

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Grand Mean: -37.06275

Stratum 1: ID

Terms:

Experiment Residuals

Sum of Squares 1300.867 10007.445

Deg. of Freedom 2 89

Residual standard error: 10.60392

2 out of 4 effects not estimable

Estimated effects may be unbalanced

Stratum 2: ID:Time

Terms:

Time Experiment:Time Residuals

Sum of Squares 1558.906 130.077 6102.026

Deg. of Freedom 1 2 89

Residual standard error: 8.280223

Estimated effects may be unbalanced

**ANOVA on reach data before aiming trials**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 Experiment 2 89 3.572348 0.03218681 \* 0.07431191

$`Levene's Test for Homogeneity of Variance`

DFn DFd SSn SSd F p p<.05

1 2 89 3.921853 5994.479 0.02911387 0.9713151

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Terms:

Experiment Residuals

Sum of Squares 906.385 11290.651

Deg. of Freedom 2 89

Residual standard error: 11.26327

Estimated effects may be unbalanced

> mean(AllDataANOVA[AllDataANOVA$Task == "Reaches" & AllDataANOVA$Time == "R1\_early" & AllDataANOVA$Experiment == "Continuous", 1], na.rm = TRUE)

[1] -30.06872

> mean(AllDataANOVA[AllDataANOVA$Task == "Reaches" & AllDataANOVA$Time == "R1\_early" & AllDataANOVA$Experiment == "Terminal", 1], na.rm = TRUE)

[1] -35.54529

> mean(AllDataANOVA[AllDataANOVA$Task == "Reaches" & AllDataANOVA$Time == "R1\_early" & AllDataANOVA$Experiment == "CursorJump", 1], na.rm = TRUE)

[1] -37.35724

**ANOVA On reaches at the end of training**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 Experiment 2 89 4.844098 0.01007056 \* 0.09816976

$`Levene's Test for Homogeneity of Variance`

DFn DFd SSn SSd F p p<.05

1 2 89 43.86541 1802.854 1.082734 0.3430869

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Terms:

Experiment Residuals

Sum of Squares 524.558 4818.820

Deg. of Freedom 2 89

Residual standard error: 7.358264

Estimated effects may be unbalanced

> mean(AllDataANOVA[AllDataANOVA$Task == "Reaches" & AllDataANOVA$Time == "R1\_late" & AllDataANOVA$Experiment == "Continuous", 1], na.rm = TRUE)

[1] -37.72617

> mean(AllDataANOVA[AllDataANOVA$Task == "Reaches" & AllDataANOVA$Time == "R1\_late" & AllDataANOVA$Experiment == "Terminal", 1], na.rm = TRUE)

[1] -39.14801

> mean(AllDataANOVA[AllDataANOVA$Task == "Reaches" & AllDataANOVA$Time == "R1\_late" & AllDataANOVA$Experiment == "CursorJump", 1], na.rm = TRUE)

[1] -43.38468

**ANOVA on No-Cursor data before aiming trials and at the end**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 Experiment 2 89 11.243259 4.430582e-05 \* 0.172887715

3 Time 1 89 24.934524 2.930873e-06 \* 0.046149036

4 Experiment:Time 2 89 1.591233 2.094136e-01 0.006137215

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Grand Mean: -20.82162

Stratum 1: ID

Terms:

Experiment Residuals

Sum of Squares 5545.064 21946.959

Deg. of Freedom 2 89

Residual standard error: 15.70335

2 out of 4 effects not estimable

Estimated effects may be unbalanced

Stratum 2: ID:Time

Terms:

Time Experiment:Time Residuals

Sum of Squares 1334.422 163.814 4581.186

Deg. of Freedom 1 2 89

Residual standard error: 7.174538

Estimated effects may be unbalanced

**ANOVA on no-cursors data before aiming trials**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 Experiment 2 89 8.199265 0.0005391601 \* 0.1555859

$`Levene's Test for Homogeneity of Variance`

DFn DFd SSn SSd F p p<.05

1 2 89 4.39231 5335.008 0.03663684 0.9640407

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Terms:

Experiment Residuals

Sum of Squares 1901.366 10319.315

Deg. of Freedom 2 89

Residual standard error: 10.76789

Estimated effects may be unbalanced

**ANOVA on no-cursors data before aiming trials**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 Experiment 2 89 10.45321 8.362374e-05 \* 0.1902202

$`Levene's Test for Homogeneity of Variance`

DFn DFd SSn SSd F p p<.05

1 2 89 755.9048 7967.876 4.221673 0.01771671 \*

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Terms:

Experiment Residuals

Sum of Squares 3807.512 16208.831

Deg. of Freedom 2 89

Residual standard error: 13.49525

Estimated effects may be unbalanced

**ANOVA on Aiming Angles**

$ANOVA

Effect DFn DFd F p p<.05 ges

2 df.Experiment 2 89 11.50897 3.585561e-05 \* 0.2054844

$`Levene's Test for Homogeneity of Variance`

DFn DFd SSn SSd F p p<.05

1 2 89 162.1925 3295.055 2.190424 0.1178644

$aov

Call:

aov(formula = formula(aov\_formula), data = data)

Terms:

df.Experiment Residuals

Sum of Squares 2543.854 9835.936

Deg. of Freedom 2 89

Residual standard error: 10.51267

Estimated effects may be unbalanced

**T-tests on aiming angles**

> t.test(data$medianaims[data$df.Experiment == 'Continuous'],data$medianaims[data$df.Experiment == 'Terminal'])

Welch Two Sample t-test

data: data$medianaims[data$df.Experiment == "Continuous"] and data$medianaims[data$df.Experiment == "Terminal"]

t = -4.9836, df = 57.405, p-value = 6.073e-06

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-16.82523 -7.18083

sample estimates:

mean of x mean of y

13.53030 25.53333

> t.test(data$medianaims[data$df.Experiment == 'Continuous'],data$medianaims[data$df.Experiment == 'Cursor-Jump'])

Welch Two Sample t-test

data: data$medianaims[data$df.Experiment == "Continuous"] and data$medianaims[data$df.Experiment == "Cursor-Jump"]

t = -3.4159, df = 49.355, p-value = 0.00128

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-15.039648 -3.899746

sample estimates:

mean of x mean of y

13.5303 23.0000

> t.test(data$medianaims[data$df.Experiment == 'Cursor-Jump'],data$medianaims[data$df.Experiment == 'Terminal'])

Welch Two Sample t-test

data: data$medianaims[data$df.Experiment == "Cursor-Jump"] and data$medianaims[data$df.Experiment == "Terminal"]

t = -0.85158, df = 54.124, p-value = 0.3982

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-8.497229 3.430562

sample estimates:

mean of x mean of y

23.00000 25.53333

**Aiming Angle vs no-cursor regression P-Values**

[1] 0.8577213 - Continuous

[1] 0.9890799 – Cursor Jump

[1] 0.1467835 - Terminal