Table 25-5 One-Way Repeated Measures ANOVA: Elbow Flexor Strength Tested in Three Forearm Positions

Also shows multiple comparisons for Table 26-8

```
GLM Pronation Neutral Supination
  /WSFACTOR=Forearm 3 Repeated
  /MEASURE=Strength
  /METHOD=SSTYPE(3)
  /EMMEANS=TABLES(Forearm) COMPARE ADJ(BONFERRONI)
  /CRITERIA=ALPHA(.05)
  /WSDESIGN=Forearm.
```

General Linear Model

Within-Subjects Factors

Measure: Strength

Forearm	Dependent Variable
1	Pronation
2	Neutral
3	Supination

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Forearm	Pillai's Trace	.895	29.991[b]	2.000	7.000	.000
	Wilks' Lambda	.105	29.991[b]	2.000	7.000	.000
	Hotelling's Trace	8.569	29.991[b]	2.000	7.000	.000
	Roy's Largest Root	8.569	29.991[b]	2.000	7.000	.000

a. Design: Intercept

Within Subjects Design: Forearm

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: Strength

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Forearm	.664	2.861	2	.239	.749	.883	.500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.[a]

a. Design: Intercept

Within Subjects Design: Forearm

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: Strength

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Forearm	Sphericity Assumed	736.889	2	368.444	50.338	.000
	Greenhouse-Geisser	736.889	1.498	492.065	50.338	.000
	Huynh-Feldt	736.889	1.765	417.463	50.338	.000
	Lower-bound	736.889	1.000	736.889	50.338	.000
Error(Forearm)	Sphericity Assumed	117.111	16	7.319		
	Greenhouse-Geisser	117.111	11.980	9.775		
	Huynh-Feldt	117.111	14.121	8.293		
	Lower-bound	117.111	8.000	14.639		

Tests of Within-Subjects Contrasts

Measure: Strength

Source	Forearm	Type III Sum of Squares	df	Mean Square	F	Sig.
Forearm	Level 1 vs. Level 2	940.444	1	940.444	66.254	.000
	Level 2 vs. Level 3	21.778	1	21.778	2.893	.127
Error(Forearm)	Level 1 vs. Level 2	113.556	8	14.194		
	Level 2 vs. Level 3	60.222	8	7.528		

Tests of Between-Subjects Effects

Measure: Strength

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	5476.000	1	5476.000	50.470	.000
Error	868.000	8	108.500		

Estimated Marginal Means

Forearm

Estimates

Measure: Strength

Forearm	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	17.333	3.383	9.532	25.134
2	27.556	3.473	19.548	35.563
3	29.111	3.780	20.394	37.828

Pairwise Comparisons

Measure: Strength

(I) Forearm	(J) Forearm	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-10.222*	1.256	.000	-14.010	-6.435
	3	-11.778*	1.570	.000	-16.514	-7.042
2	1	10.222*	1.256	.000	6.435	14.010
	3	-1.556	.915	.382	-4.314	1.203
3	1	11.778*	1.570	.000	7.042	16.514
	2	1.556	.915	.382	-1.203	4.314

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	.895	29.991[a]	2.000	7.000	.000
Wilks' lambda	.105	29.991[a]	2.000	7.000	.000
Hotelling's trace	8.569	29.991[a]	2.000	7.000	.000
Roy's largest root	8.569	29.991[a]	2.000	7.000	.000

Each F tests the multivariate effect of Forearm. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic