**Exploring Statistical Methods**

**Factorial ANOVA**

**HK 396 Quantitative Research Methods**

The following is based on the Imagery and Shooting paper (Groslambert et al., 2003).

Each group will hand in a single copy of written answers at the end of class.

1. Clearly state the purpose of the study.
2. What was the study design? Visually display the design as in Thomas, Ch.18.
3. What were the independent variable (levels) and dependent variables?
4. Describe the statistical analyses used to address the hypothesis (e.g. was a between subjects or a within subjects factor ANOVA used? Etc..)
5. What was the purpose of the Scheffe post hoc tests? Give a specific and detailed example of a question that the Scheffe test answered in the study.
6. Considering the Tremometer Test, what is more important, the significant main effect for time or the significant groups by time interaction? Using Table 1, complete the Tremometer graph on the back to support your argument.
7. What was most important finding regarding shooting performance?
8. The researchers concluded that “*No significant interaction was observed between groups and time for the shooting performance.*” Prepare a statement for a biathlon coach (who has no background in statistics) that explains the meaning of this statistical result. Clearly state (based on this result) if you believe the coach should invest his biathletes’ time on autogenic and imagery training.
9. Using Table 1, complete the Shooting Performance graph on the back. After examining the graph, and noting the size of the F statistic associated with question 7, how do you feel about your report given to the biathlon coach?
10. Why would researchers not report exact p-values? Should they? Why would this be better than reporting a p-value’s size relative to .05?

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▲ Experimental Group

• Control Group

Tremometer Test

Time 1

Time 2

Time 3

# of touches

10

2.0

2.5

▲ Experimental Group

• Control Group

Shooting Performance

Time 1

Time 2

Time 3

Missed

Targets

1.5

3.0