**Exploring Statistical Methods**

**Multiple Linear Regression**

**HK 396 Quantitative Research Methods**

The following questions pertain to the article:

Chu et al. (2010). The relationship between biomechanical variables and driving performance during the golf swing. *Journal of Sports Sciences, 28*, 1251-1259.

1. Clearly state the purpose of the study.
2. Specifically describe the dependent variables and generally describe the independent variables.
3. What type of linear regression was used in addressing the purpose? Discuss some pros and cons of this method compared to a hierarchical regression.
4. What was the purpose of performing an *a priori* power analysis?
5. Why was it important to include participants with a wide range of golfing ability and hence ball speed? Why not use a large group of professionals with a smaller standard deviation of ball speeds?
6. Describe the difference between a beta coefficient and [standardized beta coefficient](http://en.wikipedia.org/wiki/Standardized_coefficient)? I.e., what information does each statistic provide?
7. Four models, distinguished by the time during the downswing the independent variables were measured, were analyzed. Which model demonstrated the best ability to predict ball speed after impact? For that model, what independent variable was the strongest predictor of ball speed?
8. For all participants, ball speed was 61 ± 8.7 m/s. Considering Model 3 (Table III) and referring to Table II, if a golfer’s wrist hinge angle increased by 13° at 40 ms before impact, how much would their associated ball speed change by?