Keiser Skater Jump Case Study

Introduction

In order to investigate the relationship between maximal throwing velocity and a Keiser Skate Test data was collected from young adult baseball players (n=14). Maximal throwing velocity was determined by having each subject first warm up then perform a series of 10 maximal velocity throws consisting of a crow hop throw into a net. The highest-velocity throw was recorded as the maximal throwing velocity for each player. Following the maximal throwing velocity test, a Keiser machine was used to conduct a Keiser Skate Test which consisted of having the subject perform a lateral ("Heiden") jump with the Keiser machine belt attached at a height just below the subject's waist. Keiser resistance was set at constant load of 30 psi. Peak power output and distance traveled during the jump was recorded while the test was performed on jumps to both the right and left sides. Peak power and measured distances from the right and left side jumps were averaged together for analysis. Data from the testing was analyzed using a linear regression model with a predetermined level of significance set at 0.05

Results

The Keiser Skate test was determined to be a statistically significant method for predicting maximal throwing velocity when either the maximum power output or distance traveled was analyzed against throwing velocity ($p<.05$). The linear regression model based on peak power output (see figure 1) produced a slope of 0.1, indicating that a 10 watt increase in the Keiser Skate test would result in a 1 mph increase in maximal throwing velocity. Additionally, the relationship between the distance traveled during the skate test and throwing velocity (see Figure 2) produced a slope of 0.7, indicating a 10 cm increase in distance traveled would predict a 7 mph increase in maximal throwing velocity.

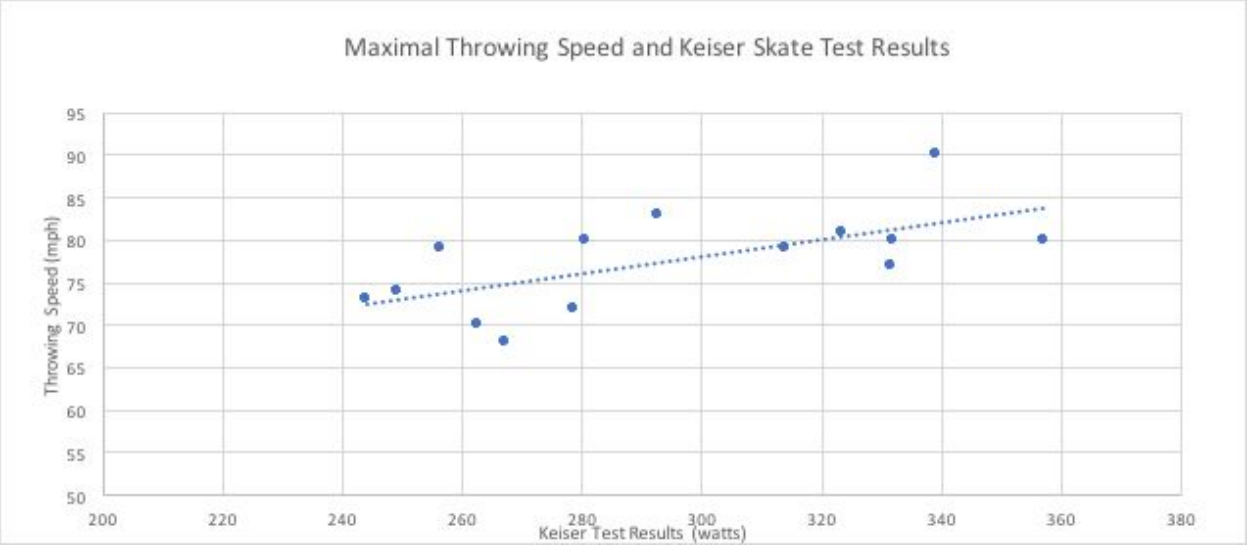
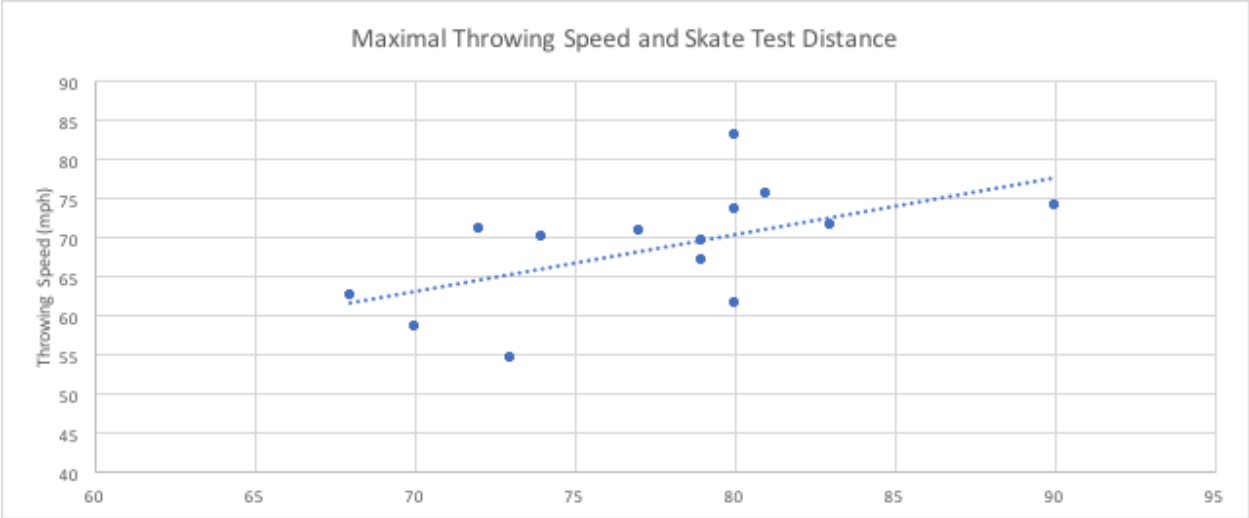


Figure 1.


Maximal Throwing Speed and Skate Test Distance
Throwing Speed (mph)
90
85
80
75
70
65
60
55
50
45
40
60
65
70
75
80
85
90
95
Figure 2.