

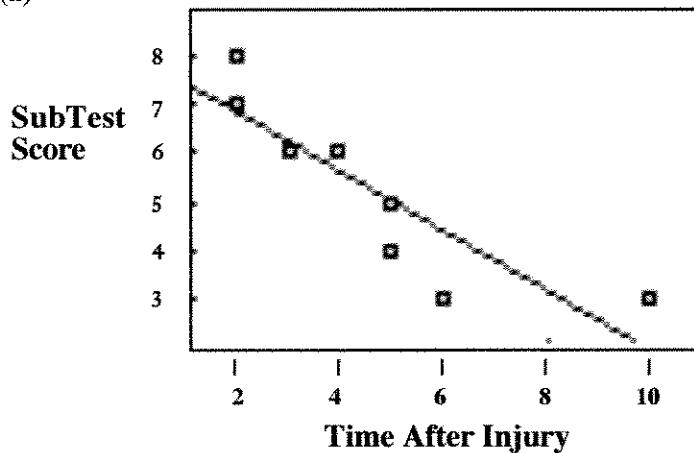
CHAPTER 9 (Test #3)

Correlation and Regression

1. The Jebsen-Taylor Hand Function Test is used to measure the recovery of coordination after traumatic injury. Below are the times after injury (in weeks) and the scores on one subtest for eight patients with similar medial nerve injuries. (a) Construct the scatter diagram and include the regression line. (b) Measure the strength of the linear relationship by calculating the correlation coefficient r and drawing a conclusion about the significance. (c) What is the coefficient of determination? Use the coefficient of determination to make a one sentence statement. (d) What is the best point estimate of a Subtest score when the Time is 7 weeks after injury? (e) Construct a 95% prediction interval (if appropriate) for 7 weeks after injury.

Time after injury	3	2	5	6	2	4	10	5
Subtest score	6	8	5	3	7	6	3	4

(a)



(b) $r \approx -0.872$ $t \approx -4.364$ P-Value ≈ 0.005 Reject H_0

Significant Negative Linear Correlation

(c) $r^2 \approx 0.760$

76.0% of the variation in subtest score can be explained by the variation in time after injury.

(d) $\hat{y} \approx 8.1 - 0.61x$ when $x = 7$ $\hat{y} \approx 3.8$

(e) 95% PI $n = 8$, $df = 6$, $t_{cv} = 2.447$ (1.16, 6.44)