

STAT 308 - Handout #20

10.5 Inferences for Two Popul'n means using paired samples

Example

The effect of exercise on the amount of lactic acid in the blood was examined in the article "A Descriptive Analysis of Elite-Level Racquetball". Eight males were selected at random from those attending a week-long training camp. Blood lactate levels were measured before and after playing three games of racquetball, as shown in the following table:

Player	Before (x)	After (y)	Difference (d)
1	13	18	
2	20	37	
3	17	40	
4	13	35	
5	13	30	
6	16	20	
7	15	33	
8	16	19	

- a. Estimate the mean change in blood lactate level using a 95% CI.

The 95% CI for $\mu_d = \mu_1 - \mu_2$ is

(Small sample and don't know σ_d).

Mean difference?

$$\bar{d} =$$

SD for difference?

$$s_d = \sqrt{\quad}$$

df? df =

Hence $\bar{d} \pm t_{0.05/2, 7} \frac{s_d}{\sqrt{n_d}}$

=

=

=

Based on the sample data, we can be 95% confident that the difference in mean blood lactate level is between

b. Based on the interval in part (a), can you say that the mean blood lactate level increases with exercise?

c. Answer part (b) using test of hypothesis. Use $\alpha=0.05$.

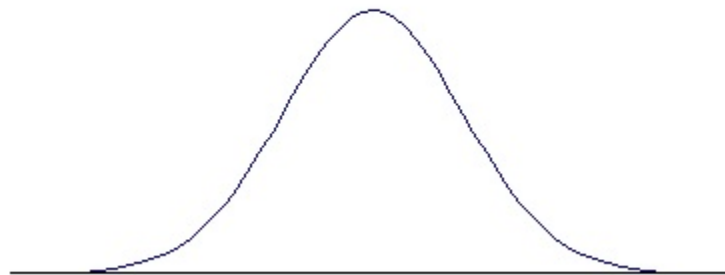
H_0 :

H_a :

Test statistics?

t =

Critical value (s)?



Since