AP Stats – Chap 24
Paired Samples and Blocks

Paired data is often comprised of two groups representing *the same people*. (The most common instance is to compare subjects with themselves before and after a treatment.)

Because the two sets of data come from the same people, the data **cannot** be independent. We cannot use a t-sample t-Test. Instead, we use a **Paired t-test**.

When the pairs arise from an experiment, the pairing is a type of **blocking**. When the pairings arise from an observational study, the pairing is a type of **matching**.

NOTE…It's the **differences** between the sets of data that we're interested in. So calculate those differences and use them as the only "set" of data!

Steps…

- Hypothesis
  - null and alternative – the mean of the differences is what we're concerned with now, μ_d
- Model
  - random **(same as before!)**
  - independent (the **differences** need to be indep.)
  - nearly normal (again, the **differences**)
  - 10% Condition **(same as before!)**
  - "We will use a Student's t-model and a Paired t-Test."
- Mechanics
  - 2:T-Test…
- Conclusion
  - reject the null / fail to reject **(same as before!)**
  - confidence interval 8:TInterval **(same as before!)**

Resting Pulse Rate

One indicator of physical fitness is resting pulse rate. Ten men volunteered to test and exercise device advertised on television by using it three times a week of 20 minutes. Their resting pulse rates (beats per minute) were measured before the test began, and then again after six weeks. Results are shown in the table. Is there evidence that this kind of exercise can reduce resting pulse rates? If so, by how much?

	Pulse rates (beats/min)	
Subject	**Before**	**After**
Allen	73	73
Brandon	83	79
Carlos	85	81
David	87	86
Edwin	91	87
Franco	99	91
Graeme	87	84
Hans	85	83
Ivan	83	84
Jorge	79	76