Note for grader: Since this is a memo directed to someone who doesn’t care about hypothesis in the results of the study. I just explained what the outcomes would be in normal terms. The way the experiment is framed Ho would be whether taking chocolate IS NOT better for each one of the cases, hence if the p-value is deemed statistically significant it means that our Ho is rejected and therefore we would agree chocolate is performance enhancing with the given confidence level

Even do we have relatively small sample, the fat we used cross over treatment was very useful since we can compare the baseline against two other results.

One small caveat with our approach is that we assume that athletes have not improved their performance through the two weeks and that all of the performance increase or decrease comes due to chocolate consumed.

Taking a closer look to the results we can see that mean performance has increased in both cases, white or dark, but we need to take a deeper look at our results. Specifically, our standard deviation and p-values.

White Chocolate’s standard deviation is much larger than baseline and Dark Chocolate’s one. This mean the results were less consistent, ie the data was more spread out. This is reflected in the P-value, we can see that the p-value is 0.319. This means that compared to baseline this result was not statistically significant and hence we can determine that it wasn’t performance enhancing with 95% confidence. In the case of Dark Chocolate, we see that the P-value is of 0.001 which is larger than our significance threshold of 0.05 and therefore is statistically significant and hence we can conclude that yes dark chocolate is performance enhancing with 95% confidence.

Moreover we also compared the change in total distance covered when using dark chocolate over white one and we saw that it was from 82- 292 meters and our p-value was of 0.003, again above the 0.05 threshold and therefore significant with 95% confidence.

My recommendation is that in the athletes implement Dark Chocolate into their diets.