[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwikxMeH0avQAhVphlQKHZjqDj0QjRwIBw&url=https://twitter.com/fitamerica&psig=AFQjCNFgUM7lJ1vA1sgKnjkgS3a_u4YMEA&ust=1479329252430865)

**Project Fit America**

A Statistical Analysis by:

Sonoma State University, California

Conducted for:

[Newton Elementary School]   
[Newton], [Illinois]

Report by:

[Cristian Hendriks]

**Abstract**

In order to find improvement within a sample mean, the results must be analyzed with respect to the Null hypothesis. The following report lists the test and procedure that I took to analyze data of an Elementary schools physical exams results.

Introduction

Project fit america is a Physical fitness program meant to study and exert as much hard work outta our youth to better themselves physically and mentally. PFA is a national agency spread through over 400 cities, and has inserted their program into about 1000 schools nationwide. They believe in fit kids, one school at a time. The goal is to have kids never resent going to their physical education classes. We want kids to positively reinforce their energy into physical activities. Each PFA sponsor will delegate a geographic area where they would like to sponsor a school. This is typically the base of the service. Soon after PFA sends letters in hopes that funds will allow them to donate money to certain schools. Soon after the grants are submitted to the independent committee to review the awards and grants. By doing this it creates a level playing field and allows the most motivated and dedicated schools to receive the program. Each school that is invited to apply will submit a five-page grant describing why they need PFA. In addition, teachers are trained by attending an all day 8-hour session to commence the program in one year. The PFA Mentor Teacher is assigned to school for a two-year period and works both on site as well as via mobile and online.

PFA sends the following

● 1,000 Fitness Cups. These are fitness cups for explosive cardio, team work, challenge and cooperation with the kids. These cups are a PFA innovation.

● A squad set of 3 lb weighted hoops. They are weighted, multicolored and feel like wetsuit material. Great for sustaining upper body strength training and cardio.

A squad set of 5 - 3 lb medicine balls

● A squad set of 5 - 6 lb medicine balls

● A squad set of 5 - 2 lb weighted jump ropes

When interpreting data, we decided to use a progressional analysis. This means that we will be studying data before the program, and then we will be studying the data after the children complete the PFA program. Ultimately then, we will be able to conclude whether or not PFA was a successful program at this elementary school. This data is collected by the school teachers who have been trained through PFA’s programs. Each student’s test scores are monitored and recorded. The test consists of a Vault Bar test, Sit-Ups, Flexed Arm Hang as well as a cardio endurance test: the PACER or the Mile Run. This data is logged through a Microsoft Excel spreadsheet containing built-in calculations. This spreadsheet is provided by PFA and can be found on their website:

(https:// www.projectfitamerica.org/testing/Testing\_Protocol\_National.html).

Soon after Sonoma State University will clean, interpret, and test this data using IBM SPSS to calculate the final result.

Data Collection

When Starting this data analysis, we begin with  observing data entry from the school itself. Staff at the given elementary school will record and send the results on a microsoft excel sheet with all the data we need to  analyze the children's progress. To obtain the most accurate and unbiased data, we will complete both pre and post PFA implementation measurements of one class at three different grade levels. The data that I will be handling will be for grades 4 and 5, from Newton Elementary school in Illinois. The data was collected  from a data set of size 101.  It’s good to have large data sets because the larger the data set, the more we can extract insights that we trust from a larger population.The spreadsheet is broken down into different categories, and sub categories to understand on a basic level the following variables that are in play for this data project. A Valid score for any student would be basically any number greater than or equal to 0, unless the row is left blank, it’s safe to assume that the student did not participate in the physical exam. This can be due to either a class change, or an exempt excuse for some given reason not listed.

There are a total of 10 different columns for their Student ID number, Grade level, Gender, Dates for pre and post,  test results for pre and post, and finally their improvement rate. This spreadsheet will allow us to better analyze the data by putting everything in the correct order for analysis. The improvement rate is calculated from calculating the mean progression of each student. This gives a visual or numerical understanding of their improvement; if present in the data. At the top of the page under the names and basic information of the elementary school, there is a column with the header listed as “I” and “Moved’. “I” stands for  injured, and “M”stands for moved. Newton Elementary ended up using the Pacer for their cardio testing, flexed arm hang/ Vault bar for strength testing and finally sit ups to test their core strength testing. The cardio test can be different depending on the school. They can choose between the Pacer test which is a shuttle run, or a mile which is a timed test.  The PACER  test can be conducted under  15 or 20 meters, but one must be specified on the spreadsheet. The sit-ups test must be timed for 2 minutes for each student. There has to be specified rules in order to obtain the best data to tell whether the program will result in a linear progression. All the following data was collected in the 2017/2018 school year. The data was logged in by Darla Mahaffey, and Blake Davidson.

Data Analysis

For the final portion of analyzing project fit america, I did a statistical analysis on Newton elementary in sarah bush Lincoln Illinois. For this school, the data was only entered for two grade levels, 4th and 5th grade. A valid score in this statistical analysis is anything 0 or higher. Any null value  would not count as a score but would be withdrawn from my analysis. Since we didn’t want any skewed data,  any student with a pre and post score of zero was removed from that certain test. It is assumed that the child was absent the day of the exam because it is not  labeled as “I” nor “M” in the cell. For the best data and most accurate results those cells of data were removed. Surprisingly there was a very minimal amount of students that were absent the day of these exams. The test that seemed to have the most null cells(Absent students) was for the Flex Arm hang exam. Out of 110 participants, 22 were not present the day of the test; 18 for the 5th graders and 4 for the 4th graders. Ultimately this would lead to decreasing the sample size of the original amount of 80 to 58. The Pacer test had zero absent students, so I was able to use the original sample size of the class as intended. However, the vault bar had a total of one absent student from both the 4th and 5th graders. One student  from the 4th grade class was removed after testing on the 16th of October. We know that he was moved because the recorder imputed “M” in the post score cell.

 When importing the data, I decided to use SPSS. This program is very handy when it comes to working with bigger data sets. It would take much longer to compute this data if it were to be calculated by hand.  To start out, I first analyzed the data for Vault. This test is based to examine the strength of the upper body. Though there was no significant skew within the data there were a few absent participants. Theoretically, if I were to keep the data set as 0 for both the pre score, and the post score the mean would have changed. By removing the outlying data, this gave me an opportunity to create the most sufficient and accurate data that could tell whether this program was a success or not.

In conclusion after receiving all the proper outputs that spss gave me along with the correct p-values, I can state which exercises saw an improving score and which ones didn’t. For the 5th grade class I tested Pacer, and flexed arm hang both saw a positive improvement.  Particularly since we calculated a p-value of .069 for the sit ups, we could not reject the null hypothesis and indeed conclude that there was no improvement for that exercise. In addition, since pacer and flexed arm hang had a p-value below .05 we were able to reject the null hypothesis and accept that PFA did help scores for these two examinations. As for the 4th grade class I tested, I saw the same results as the 5th grade class. Every test saw an improvement except for the sit-ups. For this coincidence to happen, there might have been a confounding variable at play. Since the test was taken in the winter, maybe the kids were either cold or uncomfortable which could have caused them to not be at their best during the test’s.

Conclusion

At Newton Elementary School a total of 2 grades, 5th and 6th grade were tested for physical analysis using the PFA program. To see if in favt there was improvement I used SPSS to test the change of means between the pre and post score. To do this I would have to first begin with testing for normality, and from there decide what test would best fit my data. To sum everything out, I used the Paired T-Test for my bigger sample sizes and the Wilcoxon for the smaller sample set. In Conclusion I tested 4 different for grade 5, and out of those 4 test 3 saw improvement. The test that saw improvement was the following, Vault,Pacer, and flexed arm hang. For the 4th grade class they saw the same improvement in the following test. The only test that saw a decrease in improvement was the sit-up exercise.

**Appendix A**

This appendix contains a copy of the original excel spreadsheet.

Only activities that were conducted are included in this appendix.

Sit ups

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Fit America 2018/2019 Testing** | | | | | | | | | |
| **School Name: Newton Elementary** | | | | | | | | | |
| **City, State: Newton, IL** | | | | | | | | | |
| **Phone Number: 618-783-8464** | | | | | | | | | |
| **Name of Individual Collecting Data: Davidson/Mahaffey** | | | | | | | | | |
| ***Post Testing Recording Instructions:*** | | | | | | | | | |
| ***Absent Students Must be Tested When They Return to Class*** | | | | | | | | | |
| ***I=Injured M=Moved*** | | | | | | | | | |
| ***Enter in Corresponding Pre- or Post-Test box*** | | | | | | | | | |
| **Student Information** | | | | | **Sit-Ups** | | | | |
| Timed for 2 Minutes - Enter number completed | | | | |
| # | Student ID Number | Birthdate | Grade Level | Gender (M/F) | PRE Date | PRE Test | POST Date | POST Test | Percent Improvement |
|  |
| 0 | Example | 5/31/2009 | 4 | F | 10/15/18 | 10/31/18 | 5/20/19 | 16 | -100% |  |
| 1 | 1 | 4/8/2008 | 5 | M | 10/16/18 | 57 | 4/26/2019 | 70 | 23% |  |
| 2 | 2 | 6/17/2008 | 5 | M | 10/16/18 | 53 | 4/26/2019 | 53 | 0% |  |
| 3 | 3 | 11/2/2007 | 5 | M | 10/16/18 | 44 | 4/26/2019 | 35 | -20% |  |
| 4 | 4 | 5/28/2008 | 5 | M | 10/16/18 | 43 | 4/26/2019 | 38 | -12% |  |
| 5 | 5 | 10/16/2007 | 5 | M | 10/16/18 | 70 | 4/26/2019 | 48 | -31% |  |
| 6 | 6 | 9/26/2007 | 5 | F | 10/16/18 | 50 | 4/26/2019 | 50 | 0% |  |
| 7 | 7 | 1/26/2008 | 5 | F | 10/16/18 | 51 | 4/26/2019 | 61 | 20% |  |
| 8 | 8 | 7/15/2008 | 5 | F | 10/16/18 | 54 | 4/26/2019 | 65 | 20% |  |
| 9 | 9 | 7/18/2008 | 5 | F | 10/16/18 | 42 | 4/26/2019 | 37 | -12% |  |
| 10 | 10 | 3/10/2008 | 5 | F | 10/16/18 | 30 | 4/26/2019 | 20 | -33% |  |
| 11 | 11 | 2/18/2008 | 5 | F | 10/16/18 | 6 | 4/26/2019 | 12 | 100% |  |
| 12 | 12 | 4/12/2008 | 5 | M | 10/16/18 | 49 | 4/26/2019 | 60 | 22% |  |
| 13 | 13 | 10/24/2007 | 5 | M | 10/16/18 | 1 | 4/26/2019 | 4 | 300% |  |
| 14 | 14 | 4/25/2008 | 5 | F | 10/16/18 | 36 | 4/26/2019 | 37 | 3% |  |
| 15 | 15 | 9/20/2007 | 5 | M | 10/16/18 | 32 | 4/26/2019 | 36 | 13% |  |
| 16 | 16 | 2/2/2008 | 5 | M | 10/16/18 | 51 | 4/26/2019 | 60 | 18% |  |
| 17 | 17 | 9/24/2007 | 5 | F | 10/16/18 | 43 | 4/26/2019 | 44 | 2% |  |
| 18 | 18 | 3/14/2008 | 5 | M | 10/16/18 | 36 | 4/26/2019 | 25 | -31% |  |
| 19 | 19 | 4/18/2008 | 5 | M | 10/16/18 | 53 | 4/26/2019 | 62 | 17% |  |
| 20 | 20 | 6/25/2008 | 5 | F | 10/16/18 | 56 | 4/26/2019 | 24 | -57% |  |
| 21 | 21 | 8/26/2008 | 5 | M | 10/16/18 | 32 | 4/26/2019 | 21 | -34% |  |
| 22 | 22 | 10/17/2007 | 5 | M | 10/16/18 | 30 | 4/26/2019 | 17 | -43% |  |
| 23 | 23 | 9/18/2007 | 5 | F | 10/16/18 | 50 | 4/26/2019 | 52 | 4% |  |
| 24 | 24 | 12/20/2007 | 5 | M | 10/16/18 | 35 | 4/26/2019 | 26 | -26% |  |
| 25 | 25 | 12/10/2007 | 5 | M | 10/16/18 | 41 | 4/26/2019 | 20 | -51% |  |
| 26 | 26 | 11/6/2007 | 5 | M | 10/16/18 | 61 | 4/26/2019 | 46 | -25% |  |
| 27 | 27 | 9/30/2007 | 5 | M | 10/16/18 | 60 | 4/26/2019 | 33 | -45% |  |
| 28 | 28 | 8/26/2008 | 5 | F | 10/16/18 | 46 | 4/26/2019 | 38 | -17% |  |
| 29 | 29 | 12/22/2007 | 5 | F | 10/16/18 | 50 | 4/26/2019 | 46 | -8% |  |
| 30 | 30 | 10/18/2007 | 5 | F | 10/16/18 | 65 | 4/26/2019 | 62 | -5% |  |
| 31 | 31 | 12/28/2007 | 5 | F | 10/16/18 | 28 | 4/26/2019 | 26 | -7% |  |
| 32 | 32 | 1/16/2008 | 5 | F | 10/16/18 | 41 | 4/26/2019 | 38 | -7% |  |
| 33 | 33 | 4/17/2008 | 5 | F | 10/16/18 | 52 | 4/26/2019 | 56 | 8% |  |
| 34 | 34 | 4/17/2008 | 5 | F | 10/16/18 | 48 | 4/26/2019 | 51 | 6% |  |
| 35 | 35 | 4/17/2008 | 5 | M | 10/16/18 | 40 | 4/26/2019 | 31 | -23% |  |
| 36 | 36 | 9/26/2007 | 5 | F | 10/16/18 | 48 | 4/26/2019 | 33 | -31% |  |
| 37 | 37 | 1/29/2008 | 5 | M | 10/16/18 | 40 | 4/26/2019 | 30 | -25% |  |
| 38 | 38 | 12/15/2007 | 5 | F | 10/16/18 | 15 | 4/26/2019 | 22 | 47% |  |
| 39 | 39 | 8/5/2008 | 5 | F | 10/16/18 | 44 | 4/26/2019 | 49 | 11% |  |
| 40 | 40 | 1/19/2008 | 5 | M | 10/16/18 | 26 | 4/26/2019 | 44 | 69% |  |
| 41 | 41 | 1/25/2008 | 5 | M | 10/16/18 | 54 | 4/26/2019 | 50 | -7% |  |
| 42 | 42 | 10/16/2007 | 5 | M | 10/16/18 | 44 | 4/26/2019 | 37 | -16% |  |
| 43 | 43 | 4/3/2008 | 5 | M | 10/16/18 | 42 | 4/26/2019 | 30 | -29% |  |
| 44 | 44 | 5/19/2008 | 5 | F | 10/16/18 | 27 | 4/26/2019 | 36 | 33% |  |
| 45 | 45 | 10/1/2007 | 5 | F | 10/16/18 | 45 | 4/26/2019 | 40 | -11% |  |
| 46 | 46 | 9/5/2007 | 5 | M | 10/16/18 | 30 | 4/26/2019 | 20 | -33% |  |
| 47 | 47 | 3/8/2008 | 5 | M | 10/16/18 | 59 | 4/26/2019 | 63 | 7% |  |
| 48 | 48 | 11/7/2007 | 5 | F | 10/16/18 | 32 | 4/26/2019 | 23 | -28% |  |
| 49 | 49 | 11/24/2007 | 5 | M | 10/16/18 | 54 | 4/26/2019 | 67 | 24% |  |
| 50 | 50 | 11/20/2007 | 5 | M | 10/16/18 | 35 | 4/26/2019 | 14 | -60% |  |
| 51 | 51 | 5/21/2008 | 5 | M | 10/16/18 | 23 | 4/26/2019 | 30 | 30% |  |
| 52 | 52 | 10/29/2007 | 5 | F | 10/16/18 | 16 | 4/26/2019 | 32 | 100% |  |
| 53 | 53 | 11/13/2007 | 5 | M | 10/16/18 | 8 | 4/26/2019 | 8 | 0% |  |
| 54 | 54 | 7/26/2008 | 5 | F | 10/16/18 | 21 | 4/26/2019 | 36 | 71% |  |
| 55 | 55 | 8/28/2008 | 5 | F | 10/16/18 | 34 | 4/26/2019 | 31 | -9% |  |
| 56 | 56 | 11/29/2007 | 5 | F | 10/16/18 | 30 | 4/26/2019 | 33 | 10% |  |
| 57 | 57 | 4/29/2008 | 5 | F | 10/16/18 | 37 | 4/26/2019 | 34 | -8% |  |
| 58 | 58 | 7/12/2007 | 5 | M | 10/16/18 | 59 | 4/26/2019 | 75 | 27% |  |
| 59 | 59 | 2/16/2008 | 5 | M | 10/16/18 | 32 | 4/26/2019 | 21 | -34% |  |
| 60 | 60 | 8/2/2008 | 5 | F | 10/16/18 | 58 | 4/26/2019 | 35 | -40% |  |
| 61 | 61 | 7/16/2008 | 5 | F | 10/16/18 | 51 | 4/26/2019 | 31 | -39% |  |
| 62 | 62 | 12/19/2007 | 5 | M | 10/16/18 | 49 | 4/26/2019 | 64 | 31% |  |
| 63 | 63 | 2/27/2008 | 5 | F | 10/16/18 | 30 | 4/26/2019 | 22 | -27% |  |
| 64 | 64 | 6/13/2008 | 5 | M | 10/16/18 | 50 | 4/26/2019 | 40 | -20% |  |
| 65 | 65 | 9/24/2007 | 5 | M | 10/16/18 | 30 | 4/26/2019 | 41 | 37% |  |
| 66 | 66 | 9/20/2007 | 5 | M | 10/16/18 | 61 | 4/26/2019 | 61 | 0% |  |
| 67 | 67 | 3/7/2008 | 5 | M | 10/16/18 | 52 | 4/26/2019 | 47 | -10% |  |
| 68 | 68 | 10/11/2007 | 5 | F | 10/16/18 | 45 | 4/26/2019 | 35 | -22% |  |
| 69 | 69 | 11/28/2007 | 5 | F | 10/16/18 | 46 | 4/26/2019 | 60 | 30% |  |
| 70 | 70 | 8/14/2008 | 5 | M | 10/16/18 | 44 | 4/26/2019 | 35 | -20% |  |
| 71 | 71 | 3/10/2008 | 5 | F | 10/16/18 | 47 | 4/26/2019 | 40 | -15% |  |
| 72 | 72 | 5/17/2008 | 5 | M | 10/16/18 | 38 | 4/26/2019 | 65 | 71% |  |
| 73 | 73 | 2/14/2008 | 5 | F | 10/16/18 | 65 | 4/26/2019 | 37 | -43% |  |
| 74 | 74 | 4/24/2008 | 5 | F | 10/16/18 | 48 | 4/26/2019 | 40 | -17% |  |
| 75 | 75 | 4/26/2008 | 5 | F | 10/16/18 | 43 | 4/26/2019 | 47 | 9% |  |
| 76 | 76 | 8/11/2007 | 5 | M | 10/16/18 | 40 | 4/26/2019 | 40 | 0% |  |
| 77 | 77 | 11/1/2007 | 5 | F | 10/16/18 | 17 | 4/26/2019 | 13 | -24% |  |
| 78 | 78 | 2/13/2008 | 5 | M | 10/16/18 | 60 | 4/26/2019 | 60 | 0% |  |
| 79 | 79 | 3/2/2008 | 5 | M | 10/16/18 | 44 | 4/26/2019 | 42 | -5% |  |
| 80 | 80 | 2/19/2008 | 5 | F | 10/16/18 | 60 | 4/26/2019 | 44 | -27% |  |
| 81 | 81 | 1/22/2009 | 4 | M | 10/16/18 | 50 | 4/26/2019 | 41 | -18% |  |
| 82 | 82 | 3/31/2009 | 4 | M | 10/16/18 | 45 | 4/26/2019 | 49 | 9% |  |
| 83 | 83 | 12/2/2008 | 4 | F | 10/16/18 | 34 | 4/26/2019 | 29 | -15% |  |
| 84 | 84 | 3/31/2009 | 4 | F | 10/16/18 | 27 | 4/26/2019 | 42 | 56% |  |
| 85 | 85 | 2/4/2009 | 4 | M | 10/16/18 | 42 | 4/26/2019 | 46 | 10% |  |
| 86 | 86 | 9/18/2008 | 4 | F | 10/16/18 | 61 | 4/26/2019 | 47 | -23% |  |
| 87 | 87 | 10/12/2008 | 4 | F | 10/16/18 | 42 | 4/26/2019 | 27 | -36% |  |
| 88 | 88 | 6/22/2009 | 4 | M | 10/16/18 | 45 | 4/26/2019 | 50 | 11% |  |
| 89 | 89 | 1/22/2009 | 4 | M | 10/16/18 | 43 | 4/26/2019 | moved | #VALUE! |  |
| 90 | 90 | 3/11/2009 | 4 | F | 10/16/18 | 43 | 4/26/2019 | 46 | 7% |  |
| 91 | 91 | 11/26/2008 | 4 | M | 10/16/18 | 70 | 4/26/2019 | 47 | -33% |  |
| 92 | 92 | 8/6/2009 | 4 | F | 10/16/18 | 41 | 4/26/2019 | 51 | 24% |  |
| 93 | 93 | 1/3/2009 | 4 | F | 10/16/18 | 47 | 4/26/2019 | 50 | 6% |  |
| 94 | 94 | 12/26/2008 | 4 | F | 10/16/18 | 41 | 4/26/2019 | 40 | -2% |  |
| 95 | 95 | 2/3/2009 | 4 | M | 10/16/18 | 47 | 4/26/2019 | 33 | -30% |  |
| 96 | 96 | 7/8/2009 | 4 | M | 10/16/18 | 44 | 4/26/2019 | 36 | -18% |  |
| 97 | 97 | 5/12/2009 | 4 | F | 10/16/18 | 32 | 4/26/2019 | 33 | 3% |  |
| 98 | 98 | 10/14/2008 | 4 | M | 10/16/18 | 43 | 4/26/2019 | 53 | 23% |  |
| 99 | 99 | 2/21/2008 | 4 | M | 10/16/18 | 20 | 4/26/2019 | 18 | -10% |  |
| 100 | 100 | 9/23/2008 | 4 | F | 10/16/18 | 50 | 4/26/2019 | 50 | 0% |  |
| 101 | 101 | 6/7/2009 | 4 | M | 10/16/18 | 52 | 4/26/2019 | 56 | 8% |  |

Vault-Bar

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Fit America 2017/2018 Testing** | | | | | | | | | |
| **NEWTON ELEMENTARY** | | | | | | | | | |
| **NEWTON, ILLINOIS** | | | | | | | | | |
| **Phone Number:** | | | | | | | | | |
| **DARLA MAHAFFEY AND BLAKE DAVIDSON** | | | | | | | | | |
| ***Post Testing Recording Instructions:*** | | | | |  |  |  |  |  |
| ***Absent Students Must be Tested When They Return to Class*** | | | | |  |  |  |  |  |
| ***I=Injured M=Moved*** | | | | |  |  |  |  |  |
| ***Enter in Corresponding Pre- or Post-Test box*** | | | | |  |  |  |  |  |
| **Student Information** | | | | | **VAULT BAR -** Count each time a student lands as a jump. Record "0" for students who could not perform a vault jump. | | | | |
|  |
| # | Student ID Number | Birthdate | Grade Level | Gender (M/F) | PRE Date | PRE Test | POST Date | POST Test | Percent Improvement |  |
|  |
| 0 | Example | 5/31/2009 | 4 | F | 8/13/18 | 2 | 5/20/19 | 3 | 50% |  |
| 1 | 1 | 4/8/2008 | 5 | M | 10/16/18 | 17 | 4/26/2019 | 49 | 188% |  |
| 2 | 2 | 6/17/2008 | 5 | M | 10/16/18 | 5 | 4/26/2019 | 16 | 220% |  |
| 3 | 3 | 11/2/2007 | 5 | M | 10/16/18 | 3 | 4/26/2019 | 15 | 400% |  |
| 4 | 4 | 5/28/2008 | 5 | M | 10/16/18 | 11 | 4/26/2019 | 28 | 155% |  |
| 5 | 5 | 10/16/2007 | 5 | M | 10/16/18 | 9 | 4/26/2019 | 28 | 211% |  |
| 6 | 6 | 9/26/2007 | 5 | F | 10/16/18 | 36 | 4/26/2019 | 15 | -58% |  |
| 7 | 7 | 1/26/2008 | 5 | F | 10/16/18 | 11 | 4/26/2019 | 21 | 91% |  |
| 8 | 8 | 7/15/2008 | 5 | F | 10/16/18 | 8 | 4/26/2019 | 49 | 513% |  |
| 9 | 9 | 7/18/2008 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 15 | 67% |  |
| 10 | 10 | 3/10/2008 | 5 | F | 10/16/18 | 4 | 4/26/2019 | 20 | 400% |  |
| 11 | 11 | 2/18/2008 | 5 | F | 10/16/18 | 1 | 4/26/2019 | 5 | 400% |  |
| 12 | 12 | 4/12/2008 | 5 | M | 10/16/18 | 13 | 4/26/2019 | 16 | 23% |  |
| 13 | 13 | 10/24/2007 | 5 | M | 10/16/18 | 7 | 4/26/2019 | 15 | 114% |  |
| 14 | 14 | 4/25/2008 | 5 | F | 10/16/18 | 3 | 4/26/2019 | 30 | 900% |  |
| 15 | 15 | 9/20/2007 | 5 | M | 10/16/18 | 1 | 4/26/2019 | 26 | 2500% |  |
| 16 | 16 | 2/2/2008 | 5 | M | 10/16/18 | 14 | 4/26/2019 | 40 | 186% |  |
| 17 | 17 | 9/24/2007 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 13 | 44% |  |
| 18 | 18 | 3/14/2008 | 5 | M | 10/16/18 | 3 | 4/26/2019 | 9 | 200% |  |
| 19 | 19 | 4/18/2008 | 5 | M | 10/16/18 | 32 | 4/26/2019 | 48 | 50% |  |
| 20 | 20 | 6/25/2008 | 5 | F | 10/16/18 | 4 | 4/26/2019 | 9 | 125% |  |
| 21 | 21 | 8/26/2008 | 5 | M | 10/16/18 | 4 | 4/26/2019 | 14 | 250% |  |
| 22 | 22 | 10/17/2007 | 5 | M | 10/16/18 | 3 | 4/26/2019 | 2 | -33% |  |
| 23 | 23 | 9/18/2007 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 20 | 122% |  |
| 24 | 24 | 12/20/2007 | 5 | M | 10/16/18 | 40 | 4/26/2019 | 22 | -45% |  |
| 25 | 25 | 12/10/2007 | 5 | M | 10/16/18 | 8 | 4/26/2019 | 38 | 375% |  |
| 26 | 26 | 11/6/2007 | 5 | M | 10/16/18 | 7 | 4/26/2019 | 29 | 314% |  |
| 27 | 27 | 9/30/2007 | 5 | M | 10/16/18 | 7 | 4/26/2019 | 41 | 486% |  |
| 28 | 28 | 8/26/2008 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 20 | 122% |  |
| 29 | 29 | 12/22/2007 | 5 | F | 10/16/18 | 5 | 4/26/2019 | 14 | 180% |  |
| 30 | 30 | 10/18/2007 | 5 | F | 10/16/18 | 12 | 4/26/2019 | 24 | 100% |  |
| 31 | 31 | 12/28/2007 | 5 | F | 10/16/18 | 7 | 4/26/2019 | 8 | 14% |  |
| 32 | 32 | 1/16/2008 | 5 | F | 10/16/18 | 2 | 4/26/2019 | 12 | 500% |  |
| 33 | 33 | 4/17/2008 | 5 | F | 10/16/18 | 6 | 4/26/2019 | 41 | 583% |  |
| 34 | 34 | 4/17/2008 | 5 | F | 10/16/18 | 5 | 4/26/2019 | 20 | 300% |  |
| 35 | 35 | 4/17/2008 | 5 | M | 10/16/18 | 3 | 4/26/2019 | 6 | 100% |  |
| 36 | 36 | 9/26/2007 | 5 | F | 10/16/18 | 6 | 4/26/2019 | 12 | 100% |  |
| 37 | 37 | 1/29/2008 | 5 | M | 10/16/18 | 3 | 4/26/2019 | 21 | 600% |  |
| 38 | 38 | 12/15/2007 | 5 | F | 10/16/18 | 1 | 4/26/2019 | 1 | 0% |  |
| 39 | 39 | 8/5/2008 | 5 | F | 10/16/18 | 3 | 4/26/2019 | 10 | 233% |  |
| 40 | 40 | 1/19/2008 | 5 | M | 10/16/18 | 4 | 4/26/2019 | 8 | 100% |  |
| 41 | 41 | 1/25/2008 | 5 | M | 10/16/18 | 11 | 4/26/2019 | 32 | 191% |  |
| 42 | 42 | 10/16/2007 | 5 | M | 10/16/18 | 14 | 4/26/2019 | 42 | 200% |  |
| 43 | 43 | 4/3/2008 | 5 | M | 10/16/18 | 9 | 4/26/2019 | 10 | 11% |  |
| 44 | 44 | 5/19/2008 | 5 | F | 10/16/18 | 7 | 4/26/2019 | 11 | 57% |  |
| 45 | 45 | 10/1/2007 | 5 | F | 10/16/18 | 3 | 4/26/2019 | 10 | 233% |  |
| 46 | 46 | 9/5/2007 | 5 | M | 10/16/18 | 12 | 4/26/2019 | 8 | -33% |  |
| 47 | 47 | 3/8/2008 | 5 | M | 10/16/18 | 15 | 4/26/2019 | 41 | 173% |  |
| 48 | 48 | 11/7/2007 | 5 | F | 10/16/18 | 10 | 4/26/2019 | 10 | 0% |  |
| 49 | 49 | 11/24/2007 | 5 | M | 10/16/18 | 13 | 4/26/2019 | 30 | 131% |  |
| 50 | 50 | 11/20/2007 | 5 | M | 10/16/18 | 4 | 4/26/2019 | 9 | 125% |  |
| 51 | 51 | 5/21/2008 | 5 | M | 10/16/18 | 2 | 4/26/2019 | 7 | 250% |  |
| 52 | 52 | 10/29/2007 | 5 | F | 10/16/18 | 3 | 4/26/2019 | 9 | 200% |  |
| 53 | 53 | 11/13/2007 | 5 | M | 10/16/18 | 0 | 4/26/2019 | 0 | #DIV/0! |  |
| 54 | 54 | 7/26/2008 | 5 | F | 10/16/18 | 2 | 4/26/2019 | 6 | 200% |  |
| 55 | 55 | 8/28/2008 | 5 | F | 10/16/18 | 10 | 4/26/2019 | 38 | 280% |  |
| 56 | 56 | 11/29/2007 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 10 | 11% |  |
| 57 | 57 | 4/29/2008 | 5 | F | 10/16/18 | 4 | 4/26/2019 | 6 | 50% |  |
| 58 | 58 | 7/12/2007 | 5 | M | 10/16/18 | 33 | 4/26/2019 | 48 | 45% |  |
| 59 | 59 | 2/16/2008 | 5 | M | 10/16/18 | 5 | 4/26/2019 | 3 | -40% |  |
| 60 | 60 | 8/2/2008 | 5 | F | 10/16/18 | 21 | 4/26/2019 | 26 | 24% |  |
| 61 | 61 | 7/16/2008 | 5 | F | 10/16/18 | 7 | 4/26/2019 | 11 | 57% |  |
| 62 | 62 | 12/19/2007 | 5 | M | 10/16/18 | 17 | 4/26/2019 | 50 | 194% |  |
| 63 | 63 | 2/27/2008 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 29 | 222% |  |
| 64 | 64 | 6/13/2008 | 5 | M | 10/16/18 | 41 | 4/26/2019 | 40 | -2% |  |
| 65 | 65 | 9/24/2007 | 5 | M | 10/16/18 | 11 | 4/26/2019 | 10 | -9% |  |
| 66 | 66 | 9/20/2007 | 5 | M | 10/16/18 | 7 | 4/26/2019 | 29 | 314% |  |
| 67 | 67 | 3/7/2008 | 5 | M | 10/16/18 | 12 | 4/26/2019 | 31 | 158% |  |
| 68 | 68 | 10/11/2007 | 5 | F | 10/16/18 | 9 | 4/26/2019 | 6 | -33% |  |
| 69 | 69 | 11/28/2007 | 5 | F | 10/16/18 | 13 | 4/26/2019 | 21 | 62% |  |
| 70 | 70 | 8/14/2008 | 5 | M | 10/16/18 | 5 | 4/26/2019 | 14 | 180% |  |
| 71 | 71 | 3/10/2008 | 5 | F | 10/16/18 | 5 | 4/26/2019 | 6 | 20% |  |
| 72 | 72 | 5/17/2008 | 5 | M | 10/16/18 | 3 | 4/26/2019 | 27 | 800% |  |
| 73 | 73 | 2/14/2008 | 5 | F | 10/16/18 | 16 | 4/26/2019 | 40 | 150% |  |
| 74 | 74 | 4/24/2008 | 5 | F | 10/16/18 | 6 | 4/26/2019 | 20 | 233% |  |
| 75 | 75 | 4/26/2008 | 5 | F | 10/16/18 | 12 | 4/26/2019 | 23 | 92% |  |
| 76 | 76 | 8/11/2007 | 5 | M | 10/16/18 | 11 | 4/26/2019 | 38 | 245% |  |
| 77 | 77 | 11/1/2007 | 5 | F | 10/16/18 | 2 | 4/26/2019 | 8 | 300% |  |
| 78 | 78 | 2/13/2008 | 5 | M | 10/16/18 | 7 | 4/26/2019 | 25 | 257% |  |
| 79 | 79 | 3/2/2008 | 5 | M | 10/16/18 | 1 | 4/26/2019 | 3 | 200% |  |
| 80 | 80 | 2/19/2008 | 5 | F | 10/16/18 | 11 | 4/26/2019 | 13 | 18% |  |
| 81 | 81 | 1/22/2009 | 4 | M | 10/16/18 | 24 | 4/26/2019 | 64 | 167% |  |
| 82 | 82 | 3/31/2009 | 4 | M | 10/16/18 | 7 | 4/26/2019 | 37 | 429% |  |
| 83 | 83 | 12/2/2008 | 4 | F | 10/16/18 | 1 | 4/26/2019 | 1 | 0% |  |
| 84 | 84 | 3/31/2009 | 4 | F | 10/16/18 | 9 | 4/26/2019 | 21 | 133% |  |
| 85 | 85 | 2/4/2009 | 4 | M | 10/16/18 | 6 | 4/26/2019 | 15 | 150% |  |
| 86 | 86 | 9/18/2008 | 4 | F | 10/16/18 | 10 | 4/26/2019 | 11 | 10% |  |
| 87 | 87 | 10/12/2008 | 4 | F | 10/16/18 | 11 | 4/26/2019 | 55 | 400% |  |
| 88 | 88 | 6/22/2009 | 4 | M | 10/16/18 | 2 | 4/26/2019 | 6 | 200% |  |
| 89 | 89 | 1/22/2009 | 4 | M | 10/16/18 | 16 | 4/26/2019 | moved | #VALUE! |  |
| 90 | 90 | 3/11/2009 | 4 | F | 10/16/18 | 6 | 4/26/2019 | 22 | 267% |  |
| 91 | 91 | 11/26/2008 | 4 | M | 10/16/18 | 12 | 4/26/2019 | 20 | 67% |  |
| 92 | 92 | 8/6/2009 | 4 | F | 10/16/18 | 2 | 4/26/2019 | 11 | 450% |  |
| 93 | 93 | 1/3/2009 | 4 | F | 10/16/18 | 3 | 4/26/2019 | 9 | 200% |  |
| 94 | 94 | 12/26/2008 | 4 | F | 10/16/18 | 15 | 4/26/2019 | 6 | -60% |  |
| 95 | 95 | 2/3/2009 | 4 | M | 10/16/18 | 3 | 4/26/2019 | 7 | 133% |  |
| 96 | 96 | 7/8/2009 | 4 | M | 10/16/18 | 6 | 4/26/2019 | 3 | -50% |  |
| 97 | 97 | 5/12/2009 | 4 | F | 10/16/18 | 1 | 4/26/2019 | 2 | 100% |  |
| 98 | 98 | 10/14/2008 | 4 | M | 10/16/18 | 7 | 4/26/2019 | 11 | 57% |  |
| 99 | 99 | 2/21/2008 | 4 | M | 10/16/18 | 1 | 4/26/2019 | 2 | 100% |  |
| 100 | 100 | 9/23/2008 | 4 | F | 10/16/18 | 9 | 4/26/2019 | 22 | 144% |  |
| 101 | 101 | 6/7/2009 | 4 | M | 10/16/18 | 18 | 4/26/2019 | 58 | 222% |  |

Flexed Arm hang

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| # | Student ID Number | Birthdate | Grade Level | Gender (M/F) | PRE Date | PRE Test | POST Date | POST Test | Percent Improvement |
|  |
| 0 | Example | 5/31/2009 | 4 | F | 8/13/18 | 00:10 | 5/20/19 | 00:30 | 200% |  |
| 1 | 1 | 4/8/2008 | 5 | M | 10/18/18 | 00:28 | 4/26/2019 | 0:55 | 96% |  |
| 2 | 2 | 6/17/2008 | 5 | M | 10/18/18 | 00:8.55 | 4/26/2019 | 0:09 | 6216% |  |
| 3 | 3 | 11/2/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 4 | 4 | 5/28/2008 | 5 | M | 10/18/18 | 00:6.47 | 4/26/2019 | 0:05 | 4537% |  |
| 5 | 5 | 10/16/2007 | 5 | M | 10/18/18 | 00:7.57 | 4/26/2019 | 00:13.3 | 76% |  |
| 6 | 6 | 9/26/2007 | 5 | F | 10/18/18 | 00:03 | 4/26/2019 | 00:04.3 | -98% |  |
| 7 | 7 | 1/26/2008 | 5 | F | 10/18/18 | 00:05 | 4/26/2019 | 00:14.1 | -95% |  |
| 8 | 8 | 7/15/2008 | 5 | F | 10/18/18 | 00:06.52 | 4/26/2019 | 0:09 | 8182% |  |
| 9 | 9 | 7/18/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:01.7 | #DIV/0! |  |
| 10 | 10 | 3/10/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:04.0 | #DIV/0! |  |
| 11 | 11 | 2/18/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 12 | 12 | 4/12/2008 | 5 | M | 10/18/18 | 00:13.49 | 4/26/2019 | 0:20 | 8795% |  |
| 13 | 13 | 10/24/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 14 | 14 | 4/25/2008 | 5 | F | 10/18/18 | 00:02 | 4/26/2019 | 00:09.3 | -92% |  |
| 15 | 15 | 9/20/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 16 | 16 | 2/2/2008 | 5 | M | 10/18/18 | 00:21 | 4/26/2019 | 00:35.7 | -97% |  |
| 17 | 17 | 9/24/2007 | 5 | F | 10/18/18 | 00:07.09 | 4/26/2019 | 00:02.2 | -69% |  |
| 18 | 18 | 3/14/2008 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 19 | 19 | 4/18/2008 | 5 | M | 10/18/18 | 00:08.42 | 4/26/2019 | 00:15.1 | 79% |  |
| 20 | 20 | 6/25/2008 | 5 | F | 10/18/18 | 00:07.97 | 4/26/2019 | 00:08.6 | 8% |  |
| 21 | 21 | 8/26/2008 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 22 | 22 | 10/17/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 23 | 23 | 9/18/2007 | 5 | F | 10/18/18 | 00:30.14 | 4/26/2019 | 00:34.0 | 13% |  |
| 24 | 24 | 12/20/2007 | 5 | M | 10/18/18 | 00:07.06 | 4/26/2019 | 00:05.9 | -17% |  |
| 25 | 25 | 12/10/2007 | 5 | M | 10/18/18 | 00:04.28 | 4/26/2019 | 00:05.3 | 24% |  |
| 26 | 26 | 11/6/2007 | 5 | M | 10/18/18 | 00:01 | 4/26/2019 | 00:21.1 | -65% |  |
| 27 | 27 | 9/30/2007 | 5 | M | 10/18/18 | 00:15 | 4/26/2019 | 00:06.6 | -99% |  |
| 28 | 28 | 8/26/2008 | 5 | F | 10/18/18 | 00:10 | 4/26/2019 | 0:00 | -100% |  |
| 29 | 29 | 12/22/2007 | 5 | F | 10/18/18 | 00:04.63 | 4/26/2019 | 00:04.3 | -7% |  |
| 30 | 30 | 10/18/2007 | 5 | F | 10/18/18 | 00:01 | 4/26/2019 | 00:08.5 | -86% |  |
| 31 | 31 | 12/28/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:05.9 | #DIV/0! |  |
| 32 | 32 | 1/16/2008 | 5 | F | 10/18/18 | 00:05.45 | 4/26/2019 | 00:06.9 | 27% |  |
| 33 | 33 | 4/17/2008 | 5 | F | 10/18/18 | 00:07.73 | 4/26/2019 | 00:12.5 | 62% |  |
| 34 | 34 | 4/17/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:07.6 | #DIV/0! |  |
| 35 | 35 | 4/17/2008 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 36 | 36 | 9/26/2007 | 5 | F | 10/18/18 | 00:03.08 | 4/26/2019 | 0:00 | -100% |  |
| 37 | 37 | 1/29/2008 | 5 | M | 10/18/18 | 00:07.51 | 4/26/2019 | 00:03.7 | -50% |  |
| 38 | 38 | 12/15/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 39 | 39 | 8/5/2008 | 5 | F | 10/18/18 | 00:04.68 | 4/26/2019 | 00:07.0 | 49% |  |
| 40 | 40 | 1/19/2008 | 5 | M | 10/18/18 | 00:07.30 | 4/26/2019 | 00:05.1 | -30% |  |
| 41 | 41 | 1/25/2008 | 5 | M | 10/18/18 | 00:18.32 | 4/26/2019 | 0:23 | 7433% |  |
| 42 | 42 | 10/16/2007 | 5 | M | 10/18/18 | 00:15.57 | 4/26/2019 | 00:19.8 | 27% |  |
| 43 | 43 | 4/3/2008 | 5 | M | 10/18/18 | 00:12.05 | 4/26/2019 | 00:13.1 | 9% |  |
| 44 | 44 | 5/19/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 45 | 45 | 10/1/2007 | 5 | F | 10/18/18 | 00:04.72 | 4/26/2019 | 00:05.1 | 8% |  |
| 46 | 46 | 9/5/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 47 | 47 | 3/8/2008 | 5 | M | 10/18/18 | 00:10 | 4/26/2019 | 0:09 | -10% |  |
| 48 | 48 | 11/7/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 49 | 49 | 11/24/2007 | 5 | M | 10/18/18 | 00:30.42 | 4/26/2019 | 01:02.7 | 106% |  |
| 50 | 50 | 11/20/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 51 | 51 | 5/21/2008 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 52 | 52 | 10/29/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:04.5 | #DIV/0! |  |
| 53 | 53 | 11/13/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 54 | 54 | 7/26/2008 | 5 | F | 10/18/18 | 00:02.69 | 4/26/2019 | 0:06 | 13283% |  |
| 55 | 55 | 8/28/2008 | 5 | F | 10/18/18 | 00:10.76 | 4/26/2019 | 0:08 | 4361% |  |
| 56 | 56 | 11/29/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 57 | 57 | 4/29/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 58 | 58 | 7/12/2007 | 5 | M | 10/18/18 | 00:16.82 | 4/26/2019 | 00:21.1 | 25% |  |
| 59 | 59 | 2/16/2008 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 00:02.1 | #DIV/0! |  |
| 60 | 60 | 8/2/2008 | 5 | F | 10/18/18 | 01:07.63 | 4/26/2019 | 0:36 | 3094% |  |
| 61 | 61 | 7/16/2008 | 5 | F | 10/18/18 | 00:09.84 | 4/26/2019 | 00:03.1 | -68% |  |
| 62 | 62 | 12/19/2007 | 5 | M | 10/18/18 | 00:17.44 | 4/26/2019 | 00:18.2 | 4% |  |
| 63 | 63 | 2/27/2008 | 5 | F | 10/18/18 | 00:44.48 | 4/26/2019 | 00:12.8 | -71% |  |
| 64 | 64 | 6/13/2008 | 5 | M | 10/18/18 | 00:06 | 4/26/2019 | 00:06.6 | -98% |  |
| 65 | 65 | 9/24/2007 | 5 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 66 | 66 | 9/20/2007 | 5 | M | 10/18/18 | 00:26.74 | 4/26/2019 | 00:31.3 | 17% |  |
| 67 | 67 | 3/7/2008 | 5 | M | 10/18/18 | 00:18.83 | 4/26/2019 | 00:05.6 | -70% |  |
| 68 | 68 | 10/11/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:01.4 | #DIV/0! |  |
| 69 | 69 | 11/28/2007 | 5 | F | 10/18/18 | 00:26.04 | 4/26/2019 | 00:12.9 | -50% |  |
| 70 | 70 | 8/14/2008 | 5 | M | 10/18/18 | 00:07.93 | 4/26/2019 | 00:11.1 | 40% |  |
| 71 | 71 | 3/10/2008 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 72 | 72 | 5/17/2008 | 5 | M | 10/18/18 | 00:12 | 4/26/2019 | 0:23 | 92% |  |
| 73 | 73 | 2/14/2008 | 5 | F | 10/18/18 | 00:39.18 | 4/26/2019 | 00:38.5 | -2% |  |
| 74 | 74 | 4/24/2008 | 5 | F | 10/18/18 | 00:08.51 | 4/26/2019 | 0:14 | 9771% |  |
| 75 | 75 | 4/26/2008 | 5 | F | 10/18/18 | 00:09.66 | 4/26/2019 | 00:03.8 | -61% |  |
| 76 | 76 | 8/11/2007 | 5 | M | 10/18/18 | 00:03 | 4/26/2019 | 00:17.7 | -90% |  |
| 77 | 77 | 11/1/2007 | 5 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 78 | 78 | 2/13/2008 | 5 | M | 10/18/18 | 00:26.36 | 4/26/2019 | 00:24.3 | -8% |  |
| 79 | 79 | 3/2/2008 | 5 | M | 10/18/18 | 00:01 | 4/26/2019 | 0:00 | -100% |  |
| 80 | 80 | 2/19/2008 | 5 | F | 10/18/18 | 00:30 | 4/26/2019 | 0:14 | -53% |  |
| 81 | 81 | 1/22/2009 | 4 | M | 10/18/18 | 00:10 | 4/26/2019 | 00:22.4 | -96% |  |
| 82 | 82 | 3/31/2009 | 4 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:13 | #DIV/0! |  |
| 83 | 83 | 12/2/2008 | 4 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 84 | 84 | 3/31/2009 | 4 | F | 10/18/18 | 00:06.58 | 4/26/2019 | 00:08.9 | 35% |  |
| 85 | 85 | 2/4/2009 | 4 | M | 10/18/18 | 00:04.13 | 4/26/2019 | 0:00 | -100% |  |
| 86 | 86 | 9/18/2008 | 4 | F | 10/18/18 | 00:08.12 | 4/26/2019 | 00:13.4 | 65% |  |
| 87 | 87 | 10/12/2008 | 4 | F | 10/18/18 | 00:09.13 | 4/26/2019 | 00:24.6 | 169% |  |
| 88 | 88 | 6/22/2009 | 4 | M | 10/18/18 | 00:16.2 | 4/26/2019 | 00:17.0 | 5% |  |
| 89 | 89 | 1/22/2009 | 4 | M | 10/18/18 | 00:14.1 | 4/26/2019 | moved | #VALUE! |  |
| 90 | 90 | 3/11/2009 | 4 | F | 10/18/18 | 00:14.7 | 4/26/2019 | 00:20.4 | 39% |  |
| 91 | 91 | 11/26/2008 | 4 | M | 10/18/18 | 00:14.2 | 4/26/2019 | 00:03.6 | -75% |  |
| 92 | 92 | 8/6/2009 | 4 | F | 10/18/18 | 00:15.4 | 4/26/2019 | 00:09.2 | -40% |  |
| 93 | 93 | 1/3/2009 | 4 | F | 10/18/18 | 00:00 | 4/26/2019 | 00:02.1 | #DIV/0! |  |
| 94 | 94 | 12/26/2008 | 4 | F | 10/18/18 | 00:02 | 4/26/2019 | 0:02 | 0% |  |
| 95 | 95 | 2/3/2009 | 4 | M | 10/18/18 | 00:02 | 4/26/2019 | 0:05 | 150% |  |
| 96 | 96 | 7/8/2009 | 4 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 97 | 97 | 5/12/2009 | 4 | F | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 98 | 98 | 10/14/2008 | 4 | M | 10/18/18 | 01:06 | 4/26/2019 | 00:57.4 | -99% |  |
| 99 | 99 | 2/21/2008 | 4 | M | 10/18/18 | 00:00 | 4/26/2019 | 0:00 | #DIV/0! |  |
| 100 | 100 | 9/23/2008 | 4 | F | 10/18/18 | 00:11.79 | 4/26/2019 | 00:10.7 | -9% |  |
| 101 | 101 | 6/7/2009 | 4 | M | 10/18/18 | 00:18.4 | 4/26/2019 | 00:29.9 | 63% |  |

Pacer

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Information** | | | | | **Pacer** (Record in Laps) | | | | |
|  |
| 15 Meter |  | OR | 20 Meter | X |  |
| Please enter an X in Pacer you are using | | | | |  |
| # | Student ID Number | Birthdate | Grade Level | Gender (M/F) | PRE Date | PRE Test | POST Date | POST Test | Percent Improvement |  |
|  |
| 0 | Example | 5/31/2009 | 4 | F |  |  |  |  | #DIV/0! |  |
| 1 | 1 | 4/8/2008 | 5 | M | 10/31/18 | 49 | 4/1/2019 | 45 | -8.2% |  |
| 2 | 2 | 6/17/2008 | 5 | M | 10/31/18 | 42 | 4/1/2019 | 52 | 23.8% |  |
| 3 | 3 | 11/2/2007 | 5 | M | 10/31/18 | 12 | 4/1/2019 | 21 | 75.0% |  |
| 4 | 4 | 5/28/2008 | 5 | M | 10/31/18 | 25 | 4/1/2019 | 35 | 40.0% |  |
| 5 | 5 | 10/16/2007 | 5 | M | 10/31/18 | 28 | 4/1/2019 | 31 | 10.7% |  |
| 6 | 6 | 9/26/2007 | 5 | F | 10/31/18 | 46 | 4/1/2019 | 52 | 13.0% |  |
| 7 | 7 | 1/26/2008 | 5 | F | 10/31/18 | 20 | 4/1/2019 | 23 | 15.0% |  |
| 8 | 8 | 7/15/2008 | 5 | F | 10/31/18 | 47 | 4/1/2019 | 38 | -19.1% |  |
| 9 | 9 | 7/18/2008 | 5 | F | 10/31/18 | 17 | 4/1/2019 | 21 | 23.5% |  |
| 10 | 10 | 3/10/2008 | 5 | F | 10/31/18 | 16 | 4/1/2019 | 22 | 37.5% |  |
| 11 | 11 | 2/18/2008 | 5 | F | 10/31/18 | 16 | 4/1/2019 | 15 | -6.3% |  |
| 12 | 12 | 4/12/2008 | 5 | M | 10/31/18 | 30 | 4/1/2019 | 26 | -13.3% |  |
| 13 | 13 | 10/24/2007 | 5 | M | 10/31/18 | 16 | 4/1/2019 | 13 | -18.8% |  |
| 14 | 14 | 4/25/2008 | 5 | F | 10/31/18 | 23 | 4/1/2019 | 29 | 26.1% |  |
| 15 | 15 | 9/20/2007 | 5 | M | 10/31/18 | 21 | 4/1/2019 | 23 | 9.5% |  |
| 16 | 16 | 2/2/2008 | 5 | M | 10/31/18 | 33 | 4/1/2019 | 42 | 27.3% |  |
| 17 | 17 | 9/24/2007 | 5 | F | 10/31/18 | 21 | 4/1/2019 | 21 | 0.0% |  |
| 18 | 18 | 3/14/2008 | 5 | M | 10/31/18 | 21 | 4/1/2019 | 20 | -4.8% |  |
| 19 | 19 | 4/18/2008 | 5 | M | 10/31/18 | 57 | 4/1/2019 | 67 | 17.5% |  |
| 20 | 20 | 6/25/2008 | 5 | F | 10/31/18 | 14 | 4/1/2019 | 17 | 21.4% |  |
| 21 | 21 | 8/26/2008 | 5 | M | 10/31/18 | 21 | 4/1/2019 | 24 | 14.3% |  |
| 22 | 22 | 10/17/2007 | 5 | M | 10/31/18 | 9 | 4/1/2019 | 8 | -11.1% |  |
| 23 | 23 | 9/18/2007 | 5 | F | 10/31/18 | 22 | 4/1/2019 | 21 | -4.5% |  |
| 24 | 24 | 12/20/2007 | 5 | M | 10/31/18 | 61 | 4/1/2019 | 60 | -1.6% |  |
| 25 | 25 | 12/10/2007 | 5 | M | 10/31/18 | 37 | 4/1/2019 | 25 | -32.4% |  |
| 26 | 26 | 11/6/2007 | 5 | M | 10/31/18 | 54 | 4/1/2019 | 68 | 25.9% |  |
| 27 | 27 | 9/30/2007 | 5 | M | 10/31/18 | 3 | 4/1/2019 | 45 | 1400.0% |  |
| 28 | 28 | 8/26/2008 | 5 | F | 10/31/18 | 27 | 4/1/2019 | 29 | 7.4% |  |
| 29 | 29 | 12/22/2007 | 5 | F | 10/31/18 | 24 | 4/1/2019 | 25 | 4.2% |  |
| 30 | 30 | 10/18/2007 | 5 | F | 10/31/18 | 23 | 4/1/2019 | 23 | 0.0% |  |
| 31 | 31 | 12/28/2007 | 5 | F | 10/31/18 | 13 | 4/1/2019 | 17 | 30.8% |  |
| 32 | 32 | 1/16/2008 | 5 | F | 10/31/18 | 18 | 4/1/2019 | 22 | 22.2% |  |
| 33 | 33 | 4/17/2008 | 5 | F | 10/31/18 | 26 | 4/1/2019 | 31 | 19.2% |  |
| 34 | 34 | 4/17/2008 | 5 | F | 10/31/18 | 25 | 4/1/2019 | 42 | 68.0% |  |
| 35 | 35 | 4/17/2008 | 5 | M | 10/31/18 | 14 | 4/1/2019 | 21 | 50.0% |  |
| 36 | 36 | 9/26/2007 | 5 | F | 10/31/18 | 22 | 4/1/2019 | 22 | 0.0% |  |
| 37 | 37 | 1/29/2008 | 5 | M | 10/31/18 | 19 | 4/1/2019 | 33 | 73.7% |  |
| 38 | 38 | 12/15/2007 | 5 | F | 10/31/18 | 12 | 4/1/2019 | 11 | -8.3% |  |
| 39 | 39 | 8/5/2008 | 5 | F | 10/31/18 | 17 | 4/1/2019 | 16 | -5.9% |  |
| 40 | 40 | 1/19/2008 | 5 | M | 10/31/18 | 11 | 4/1/2019 | 14 | 27.3% |  |
| 41 | 41 | 1/25/2008 | 5 | M | 10/31/18 | 65 | 4/1/2019 | 59 | -9.2% |  |
| 42 | 42 | 10/16/2007 | 5 | M | 10/31/18 | 50 | 4/1/2019 | 34 | -32.0% |  |
| 43 | 43 | 4/3/2008 | 5 | M | 10/31/18 | 15 | 4/1/2019 | 21 | 40.0% |  |
| 44 | 44 | 5/19/2008 | 5 | F | 10/31/18 | 15 | 4/1/2019 | 18 | 20.0% |  |
| 45 | 45 | 10/1/2007 | 5 | F | 10/31/18 | 17 | 4/1/2019 | 20 | 17.6% |  |
| 46 | 46 | 9/5/2007 | 5 | M | 10/31/18 | 16 | 4/1/2019 | 10 | -37.5% |  |
| 47 | 47 | 3/8/2008 | 5 | M | 10/31/18 | 52 | 4/1/2019 | 49 | -5.8% |  |
| 48 | 48 | 11/7/2007 | 5 | F | 10/31/18 | 20 | 4/1/2019 | 23 | 15.0% |  |
| 49 | 49 | 11/24/2007 | 5 | M | 10/31/18 | 63 | 4/1/2019 | 63 | 0.0% |  |
| 50 | 50 | 11/20/2007 | 5 | M | 10/31/18 | 13 | 4/1/2019 | 6 | -53.8% |  |
| 51 | 51 | 5/21/2008 | 5 | M | 10/31/18 | 18 | 4/1/2019 | 19 | 5.6% |  |
| 52 | 52 | 10/29/2007 | 5 | F | 10/31/18 | 12 | 4/1/2019 | 14 | 16.7% |  |
| 53 | 53 | 11/13/2007 | 5 | M | 10/31/18 | 8 | 4/1/2019 | 12 | 50.0% |  |
| 54 | 54 | 7/26/2008 | 5 | F | 10/31/18 | 14 | 4/1/2019 | 16 | 14.3% |  |
| 55 | 55 | 8/28/2008 | 5 | F | 10/31/18 | 28 | 4/1/2019 | 26 | -7.1% |  |
| 56 | 56 | 11/29/2007 | 5 | F | 10/31/18 | 16 | 4/1/2019 | 16 | 0.0% |  |
| 57 | 57 | 4/29/2008 | 5 | F | 10/31/18 | 27 | 4/1/2019 | 19 | -29.6% |  |
| 58 | 58 | 7/12/2007 | 5 | M | 10/31/18 | 66 | 4/1/2019 | 61 | -7.6% |  |
| 59 | 59 | 2/16/2008 | 5 | M | 10/31/18 | 21 | 4/1/2019 | 14 | -33.3% |  |
| 60 | 60 | 8/2/2008 | 5 | F | 10/31/18 | 54 | 4/1/2019 | 51 | -5.6% |  |
| 61 | 61 | 7/16/2008 | 5 | F | 10/31/18 | 17 | 4/1/2019 | 25 | 47.1% |  |
| 62 | 62 | 12/19/2007 | 5 | M | 10/31/18 | 41 | 4/1/2019 | 25 | -39.0% |  |
| 63 | 63 | 2/27/2008 | 5 | F | 10/31/18 | 34 | 4/1/2019 | 33 | -2.9% |  |
| 64 | 64 | 6/13/2008 | 5 | M | 10/31/18 | 23 | 4/1/2019 | 23 | 0.0% |  |
| 65 | 65 | 9/24/2007 | 5 | M | 10/31/18 | 16 | 4/1/2019 | 24 | 50.0% |  |
| 66 | 66 | 9/20/2007 | 5 | M | 10/31/18 | 53 | 4/1/2019 | 64 | 20.8% |  |
| 67 | 67 | 3/7/2008 | 5 | M | 10/31/18 | 32 | 4/1/2019 | 26 | -18.8% |  |
| 68 | 68 | 10/11/2007 | 5 | F | 10/31/18 | 15 | 4/1/2019 | 16 | 6.7% |  |
| 69 | 69 | 11/28/2007 | 5 | F | 10/31/18 | 33 | 4/1/2019 | 21 | -36.4% |  |
| 70 | 70 | 8/14/2008 | 5 | M | 10/31/18 | 63 | 4/1/2019 | 68 | 7.9% |  |
| 71 | 71 | 3/10/2008 | 5 | F | 10/31/18 | 15 | 4/1/2019 | 14 | -6.7% |  |
| 72 | 72 | 5/17/2008 | 5 | M | 10/30/18 | 45 | 4/1/2019 | 37 | -17.8% |  |
| 73 | 73 | 2/14/2008 | 5 | F | 10/30/18 | 40 | 4/1/2019 | 33 | -17.5% |  |
| 74 | 74 | 4/24/2008 | 5 | F | 10/30/18 | 42 | 4/1/2019 | 35 | -16.7% |  |
| 75 | 75 | 4/26/2008 | 5 | F | 10/30/18 | 45 | 4/1/2019 | 39 | -13.3% |  |
| 76 | 76 | 8/11/2007 | 5 | M | 10/30/18 | 31 | 4/1/2019 | 33 | 6.5% |  |
| 77 | 77 | 11/1/2007 | 5 | F | 10/30/18 | 12 | 4/1/2019 | 12 | 0.0% |  |
| 78 | 78 | 2/13/2008 | 5 | M | 10/30/18 | 48 | 4/1/2019 | 43 | -10.4% |  |
| 79 | 79 | 3/2/2008 | 5 | M | 10/30/18 | 21 | 4/1/2019 | 21 | 0.0% |  |
| 80 | 80 | 2/19/2008 | 5 | F | 10/30/18 | 32 | 4/1/2019 | 28 | -12.5% |  |
| 81 | 81 | 1/22/2009 | 4 | M | 10/30/18 | 53 | 4/1/2019 | 42 | -20.8% |  |
| 82 | 82 | 3/31/2009 | 4 | M | 10/30/18 | 55 | 4/1/2019 | 48 | -12.7% |  |
| 83 | 83 | 12/2/2008 | 4 | F | 10/30/18 | 13 | 4/1/2019 | 8 | -38.5% |  |
| 84 | 84 | 3/31/2009 | 4 | F | 10/30/18 | 30 | 4/1/2019 | 29 | -3.3% |  |
| 85 | 85 | 2/4/2009 | 4 | M | 10/30/18 | 16 | 4/1/2019 | 17 | 6.3% |  |
| 86 | 86 | 9/18/2008 | 4 | F | 10/30/18 | 17 | 4/1/2019 | 42 | 147.1% |  |
| 87 | 87 | 10/12/2008 | 4 | F | 10/30/18 | 42 | 4/1/2019 | 44 | 4.8% |  |
| 88 | 88 | 6/22/2009 | 4 | M | 10/30/18 | 18 | 4/1/2019 | 16 | -11.1% |  |
| 89 | 89 | 1/22/2009 | 4 | M | 10/30/18 | 25 |  | moved | #VALUE! |  |
| 90 | 90 | 3/11/2009 | 4 | F | 10/30/18 | 17 | 4/1/2019 | 26 | 52.9% |  |
| 91 | 91 | 11/26/2008 | 4 | M | 10/30/18 | 31 | 4/1/2019 | 22 | -29.0% |  |
| 92 | 92 | 8/6/2009 | 4 | F | 10/30/18 | 9 | 4/1/2019 | 16 | 77.8% |  |
| 93 | 93 | 1/3/2009 | 4 | F | 10/30/18 | 13 | 4/1/2019 | 17 | 30.8% |  |
| 94 | 94 | 12/26/2008 | 4 | F | 10/30/18 | 22 | 4/1/2019 | 26 | 18.2% |  |
| 95 | 95 | 2/3/2009 | 4 | M | 10/30/18 | 17 | 4/1/2019 | 13 | -23.5% |  |
| 96 | 96 | 7/8/2009 | 4 | M | 10/30/18 | 5 | 4/1/2019 | 7 | 40.0% |  |
| 97 | 97 | 5/12/2009 | 4 | F | 10/30/18 | 9 | 4/1/2019 | 16 | 77.8% |  |
| 98 | 98 | 10/14/2008 | 4 | M | 10/30/18 | 20 | 4/1/2019 | 47 | 135.0% |  |
| 99 | 99 | 2/21/2008 | 4 | M | 10/30/18 | 5 | 4/1/2019 | 8 | 60.0% |  |
| 100 | 100 | 9/23/2008 | 4 | F | 10/30/18 | 21 | 4/1/2019 | 17 | -19.0% |  |
| 101 | 101 | 6/7/2009 | 4 | M | 10/30/18 | 51 | 4/1/2019 | 28 | -45.1% |  |

Copy and paste your data here

Appendix B

This appendix contains a glossary of the statistical terms used in this report.

Appendix B: Glossary

**List of Symbols**

**Symbol Description**

|  |  |  |
| --- | --- | --- |
| ≈ |  | Approximately equal to |
| n |  | Sample Size |
| H0 |  | Null Hypothesis |
| Ha |  | Alternative Hypothesis |
| µ |  | Population Mean |
| µpre |  | Population Mean of Pre-Scores |
| µpost |  | Population Mean of Post-Scores |
| x̅ |  | Sample Mean |
| σ |  | Population Standard Deviation |
| s |  | Sample Standard Deviation |
| SW |  | Shapiro-Wilk Test Statistic |
| W |  | Wilcoxon Signed-Rank Test Statistic |
| t |  | Paired t Test Statistic |
| α |  | Significance Level |

**Alternative Hypothesis (Ha)**: When performing a hypothesis test, the alternative hypothesis is what the researcher is gathering evidence to support. When testing for improvement the alternative hypothesis implies there is an improvement at the end of the program. *See: Hypothesis Test, Null Hypothesis.*

**Boxplot**: A graphical display of a set of data that can be used to determine the distribution of the data as well as any possible outliers.

**Central Limit Theorem**: The central limit theorem states that the larger the sample size (n), the more nearly normally distributed the population of all possible sample means. This is one advantage to having a larger sample size. *See: Distribution, Normal Distribution, Paired-Samples T-test, Sample, and Sample Size.*

**Confidence Intervals**: An estimate of a population value determined by using data from a sample and a predetermined confidence level. *See: Confidence Level, Data, Mean, Paired Data, Population Parameter and Sample.*

**Confidence Level**: A measure of the reliability of the confidence interval’s estimation of the population value. It is the probability that a population value is contained in the confidence interval and is also used to create the confidence interval using data from a sample. *See: Confidence Interval, Population Parameter, Probability, Reliability, Sample, and Sample Statistic.*

**Control Group**: A comparative group that receives no treatment, or a neutral treatment, to better assess the validity of the experiment. The control group would not participate in PFA activities but would still collect pre-scores and post-scores to provide comparative data. In this case, a control group would allow us to determine if improvements are due to PFA or to natural developmental changes in the participants throughout the year. *See: Post-Scores, Pre-Scores, and Validity*.

**Critical Value**: When trying to show an improvement, the critical value is the amount of difference necessary in order to conclude that the improvement was statistically significant. *See: Sample and Statistically Significant.*

**Data**: A collection of information from which conclusions may be drawn.

**Distribution**: A description of the relative number of times each possible outcome occurs.

**Histogram**: A graph used to visualize the data, for example, its shape or distribution. *See: Data and Distribution.*

**Hypothesis Test**: A method of analyzing data. For example, we used either the Paired t-Test or the Paired Wilcoxon Signed-Rank test when trying to show improvements in the mean scores. *See: Alternative Hypothesis, Data, Mean, Null Hypothesis, Paired t-Test, Paired Wilcoxon Signed-Rank Test, and Probability.*

**Mean/Average (μ, x̄)**: Determined by adding up all values in the data and dividing the sum by the number of observations. Mu (μ) denotes the population mean and x-bar (x̄) denotes the sample mean. *See: Data and Population*.

**Natural Sampling Variability**: Natural sampling variability is the differences seen between samples taken from the same population. *See: Population, Sample, and Variation*.

**Nonparametric Test**: A category of hypothesis tests that are performed when the population is not normally distributed or when the sample size is small. For example, when our population is not normally distributed and our sample size is small, we use the Paired Wilcoxon Signed-Rank test. *See: Hypothesis Test, Normal Distribution, Paired Wilcoxon Signed-Rank Test Population, Sample, and Sample Size*.

**Normality or Normal Distribution**: A probability distribution where the highest probabilities are concentrated around the mean and decrease as the values deviate from the mean. A normal distribution has a distinct bell shaped curve. When necessary we use the Shapiro-Wilk Test to test for normality before deciding which paired hypothesis test to use for analysis. *See: Mean, Probability, Probability Distribution and Shapiro-Wilk Test.*

**Null Hypothesis (Ho)**: What you start out assuming is true about the population when performing a hypothesis test. When testing for improvement we start out believing there is no improvement and that the mean for the pre-scores is equal to the mean for the post-scores. *See: Hypothesis Test, Mean, and Population, Post-Score, and Pre-Score*.

**Outlier**: A data value that is not close to the remaining data values. An outlier can have a large effect on the value of the mean. A boxplot can be used to detect possible outliers. *See: Mean, boxplot.*

**Paired Data**: Two sets of data are paired when each observation in one data set is related to one observation in the other data set. For example, our paired data are the pre and post-data sets that are linked by the participants. If a student does not have a pre and post-score recorded, then their score is not paired and is removed from the sample before analysis.

**Paired t-Test**: A hypothesis test used to test the mean of a set of paired data. This test is often used to compare “pre” and “post” scores in experiments to determine whether statistically significant change has occurred. This hypothesis test requires that the paired data come from a normally distributed population or has a sufficiently large sample size. *See: Central Limit Theorem, Hypothesis Test, Mean, Normal Distribution, Paired Data, Sample, Sample Size, and Statistically Significant.*

**Paired Wilcoxon Signed-Rank Test**: A nonparametric alternative to the Paired-Samples t-test. It is used to test the mean of a set of paired data and is often used to compare pre-scores and post- scores in experiments to determine whether statistically significant change has occurred. This test does not require that the data come from a normally distributed population or have a sufficiently large sample size. *See: Central Limit Theorem, Hypothesis Test, Mean, Nonparametric Test, Paired Data, Paired-Samples T-test, Sample, Sample Size, and Statistically Significant.*

**Population**: The collection of all students who are potential participants in Project Fit America.

**Population Parameter**: A measure of some attribute of a population. For example, the population mean and population proportion are population parameters. *See: Mean, Population, and Sample Statistic.*

**Post-Score**: The fitness test score that was collected at the end of the academic after the completion the year-long Project Fit America program.

**Pre-Score**: The fitness test score that was collected at the beginning of the academic year before the students began the Project Fit America program.

**Probability**: A value ranging from 0 to 1, inclusive, that measures the likelihood that an event will occur.

**Probability Distribution**: A table, chart, graph, or equation that links all possible values of a variable with an indication of their probabilities of occurrence. An example is the normal distribution. *See: Distribution, Normal Distribution, and Probability*.

**P-Value**: The p-value is a probability which is between 0 and 1. The p-value indicates the probability the observed sample results were caused by natural sampling variability if the null hypothesis is true. The lower the p-value, the more likely it is that the difference between groups was caused by the treatment and not caused by natural sampling variability. The higher the p-value the less likely that the difference was caused by treatment and more likely caused by natural sampling variability. *See: Natural Sampling Variability, Probability, Sample, and Statistically Significant.*

**Reliability**: Refers to the consistency that a measurement yields similar results again and again. For example, in order for our analysis to be reliable, the scores for each fitness test must be measured and collected consistently.

**Sample**: The actual data collected from the participants with both pre and post-scores.   
For quantitative data, typically a sample is considered large if it is greater than or equal to 30 units and is considered small if it is less than 30 units. *See: Data, Population, Post-Scores, and Pre-Scores.*

**Sample Size (n)**: Refers to the number of valid observations in a sample. For paired data the sample size is the number of valid pairs of data.

**Sample Statistic**: A measure of some attribute of a sample. For example, the sample mean and sample proportion are sample statistics. *See: Mean, Population Parameter, and Sample.*

**Shapiro-Wilk Test**: A hypothesis test that is used to compare a sample with a reference probability distribution, such as a normal distribution. For quantitative data in which the sample size is less than 30, this is used as a preliminary test in order to determine the appropriate hypothesis test when testing for improvement. *See: Normal Distribution, Population, and Sample.*

**Significance Level (α)**: A probability with values between 0 and 1 that we compare with the p-value in order to determine whether the results are statistically significant. It indicates the tolerance level for the p-value. The significance level is typically set before the experiment begins. *See: Natural Sampling Variability, Probability, P-Value, and Statistically Significant*

**Simple Random Sample**: A sampling method in which all possible units in a population have an equal probability of being sampled. *See: Population, Probability, and Sample*.

**Skewness**: Describes a distribution that is not symmetric. In a histogram this would be seen as showing the data as more concentrated on the left or the right. *See: Histogram.*

**Standard Deviation (σ, s)**: A measurement that measures how much the data deviates from the mean in standardized units. The population standard deviation is represented by σ, and the sample standard deviation is represented by s. *See: Data, Mean, and Variation.*

**Stata**: A computer program used for statistical analysis.

**Statistical Package for Social Sciences (IBM SPSS)**: A computer program used for statistical analysis.

**Statistically Significant**: The results of a hypothesis test are statistically significant if there is a very small chance that the sample results occurred by natural sampling variability if the null hypothesis is true. We use the significance level to determine how small the p-value needs to be in order for the results to be considered statistically significant. If the p-value is lower than the significance level than we would consider the results statistically significant. *See: Hypothesis Test, Natural Sampling Variability, P-Value, Sample, and Significance Level.*

**Test Statistic**: A numerical value calculated from the data that is used to determine whether the evidence suggests there was a statistically significant change. *See: Statistically Significant.*

**Validity**: The degree to which the study or experiment measures what it is supposed to measure. For instance, do the fitness tests performed actually measure physical fitness improvement?

**Variability**: An indication of how widely spread or how closely clustered the data values are to each other. *See: Data and Standard Deviation*.

**Appendix C**

In conclusion after receiving all the proper outputs that SPSS gave me along with the correct p-values, I can state which exercises saw an improving score and which ones didn’t. For the 5th grade class I tested Pacer, and flexed arm hang both saw a positive improvement.  Particularly since we calculated a p-value of .069 for the sit ups, we could not reject the null hypothesis and indeed conclude that there was no improvement for that exercise. In addition, since pacer and flexed arm hang had a p-value below .05 we were able to reject the null hypothesis and accept that PFA did help scores for these two examinations. As for the 4th grade class I tested, I saw the same results as the 5th grade class. Every test saw an improvement except for the sit-ups. For this coincidence to happen, there might have been a confounding variable at play. Since the test was taken in the winter, maybe the kids were either cold or uncomfortable which could have caused them to not be at their best during the test’s.

Include your data analysis here. Follow the format that we discussed during class.

Appendix D

This appendix contains a brief description of the fitness activities performed by the students.

For complete descriptions please see the official PFA website at

www.projectfitamerica.org/testing/Testing\_Protocol\_National.html

**Cardio Testing**

**PACER Test (Progressive Aerobic Cardiovascular Endurance Run):** A course of 15 meters or 20 meters is marked off with cones. Students run across the area and cross the cone line before a beep is played on a CD. At the sound of the beep, they turn around and go back to the other end. If students get to the end before the beep, they must wait for the beep before running in the other direction. Students are allowed to miss two times before they must stop. They may also choose to come off the activity when they have reached their level of perceived exhaustion.

**Paced Full Mile Run/Walk**: Students are timed to see how long it takes them to run and/or walk a mile.

**Upper Body Strength Testing**

**Flexed Arm Hang**: The student begins with chin over the bar, but not touching the bar. Their hands can over or under grip. Students are told to hold the position as long as possible. The amount of time a student can hold the position is recorded.

**Abdominal Strength Testing**

**Sit-ups**: Students’ knees are bent at 45 degree angle, arms placed across the chest with either hand located on either shoulder. Their arms must remain crossed and hands must remain on the shoulders for the sit-up to count. The student’s elbows must touch thighs but cannot touch ground on the way up. Students are timed for 60 seconds and the number of correctly performed sit-ups is recorded.

**Explosive Leg Strength Test**

**Vault Bar Procedure:** Students begin with both hands on the vault bar and jump over the vault bar without removing hands. Both feet must land together on each side of vault bar at the same time. Count each time the student lands on each side as one (1) jump. Continue counting until the student stops or until both feet do not land at the same time. Record the number of jumps that the student can perform. A 0 should be entered for students who cannot perform a vault bar jump. This test is not a timed test.