



2016

PROGRAM EVALUATION

ARIZONA SCHOOL DISTRICTS

Prepared by:

Melanie Steen
Actuarial Analyst
July 2016

Table of Contents

Summary of Results

Exhibit 1 – Summary of Results by School

Exhibit 2 – Graphical Results by School – Knowledge and Strength & Endurance

Exhibit 3 – Graphical Results by School – Cardiovascular Measurements

Exhibit 4 – Graphical Results - Percentage of Students Showing Improvement

Pre & Post Test Scores

Exhibit 5 - Pre & Post Test Scores for Knowledge of Nutrients

Exhibit 6 - Pre & Post Test Scores for Strength & Endurance

Exhibit 7 – Pre & Post Test Scores for Cardiovascular Measurements

Exhibit 8 - Pre & Post Test Scores for Cardiovascular Ranges

Exhibit 9 – Pre & Post Test Scores for Systolic Blood Pressure Ranges

Exhibit 10 – Pre & Post Test Scores for Diastolic Blood Pressure Ranges

Exhibit 11 - Pre & Post Test Scores for Resting Heart Rate Ranges

Statistical Tests

Appendix A– Statistical Results for All Schools

Exhibit 1
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Mean Score Improvement & Percentage Improvement by Classroom

School	Student Count*	Knowledge of Nutrients		Push-Ups		Sit-Ups	
		Mean Change	Mean % Change	Mean Change	Mean % Change	Mean Change	Mean % Change
Jasinski	73	1.52	33.0%	1.46	74.5%	1.91	56.3%
WestPark	75	2.44	78.9%				
Buckeye	22	5.14	185.2%	4.32	38.9%	21.26	104.1%
Bales	20	4.70	159.3%	5.14	78.8%	20.19	233.0%
INCA	17	4.35	160.9%	6.33	65.1%	17.94	168.2%
Total	207	2.78	78.3%	3.42	60.9%	11.20	132.7%

School	Student Count*	Systolic Blood Pressure		Diastolic Blood Pressure		Resting Heart Rate	
		Mean Change	Mean % Change	Mean Change	Mean % Change	Mean Change	Mean % Change
Jasinski	73						
WestPark	75						
Buckeye	22	0.95	0.9%	-0.25	-0.4%	-5.60	-6.6%
Bales	20	-2.47	-2.5%	-4.94	-7.4%	-4.65	-5.9%
INCA	17	3.56	3.7%	0.28	0.5%	-5.33	-6.4%
Total	207	0.75	0.7%	-1.53	-2.4%	-5.22	-6.3%

*Student count is based upon the number of students that had a pre and post test score for knowledge of nutrients

Exhibit 2
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

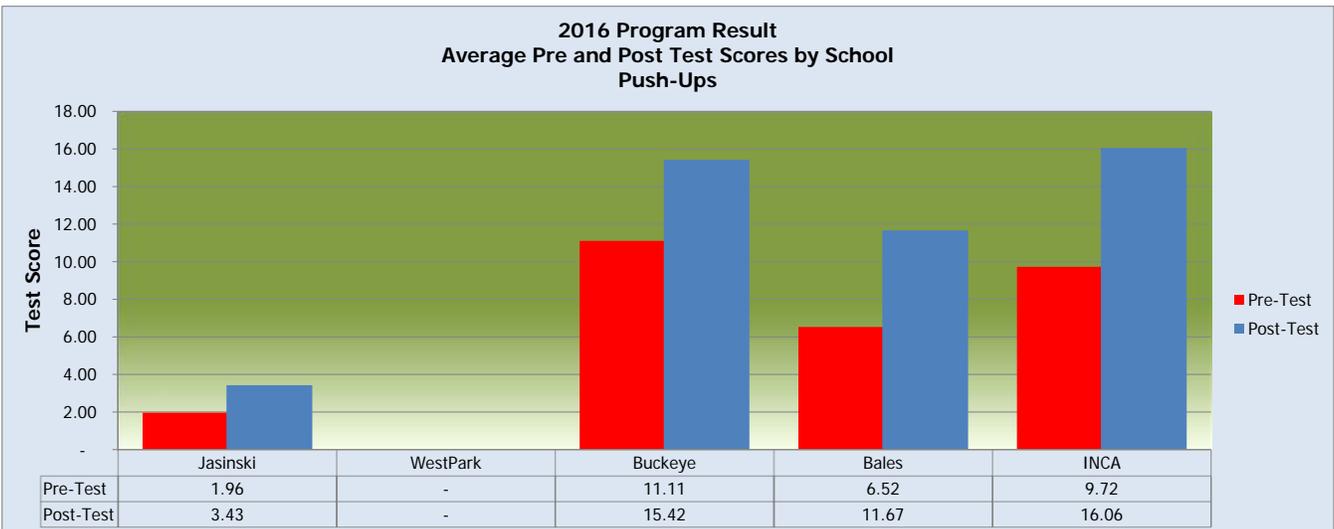
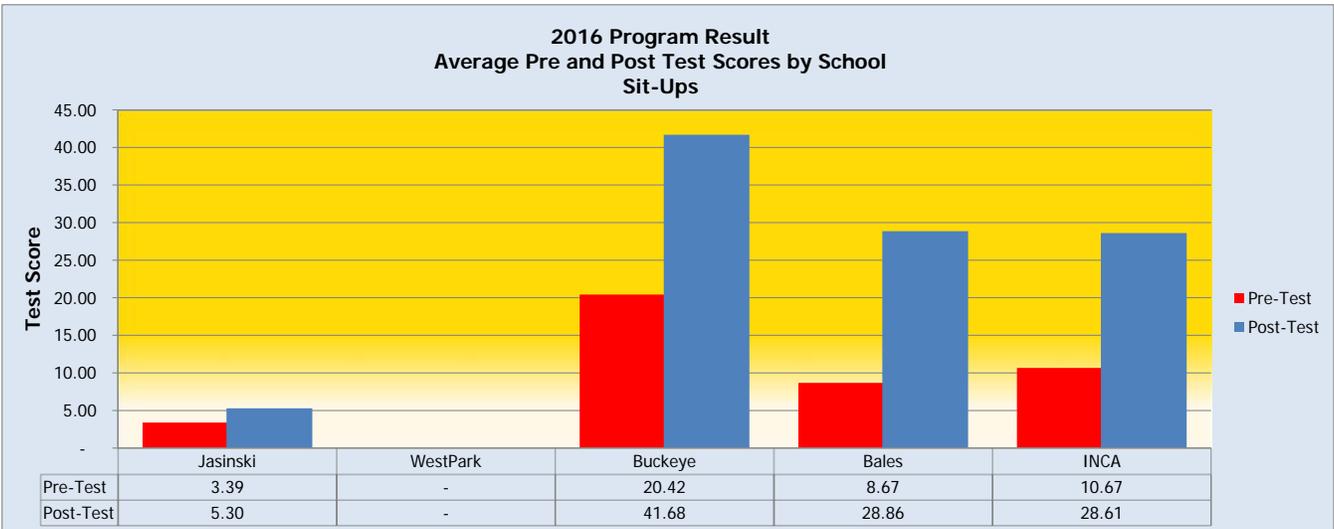
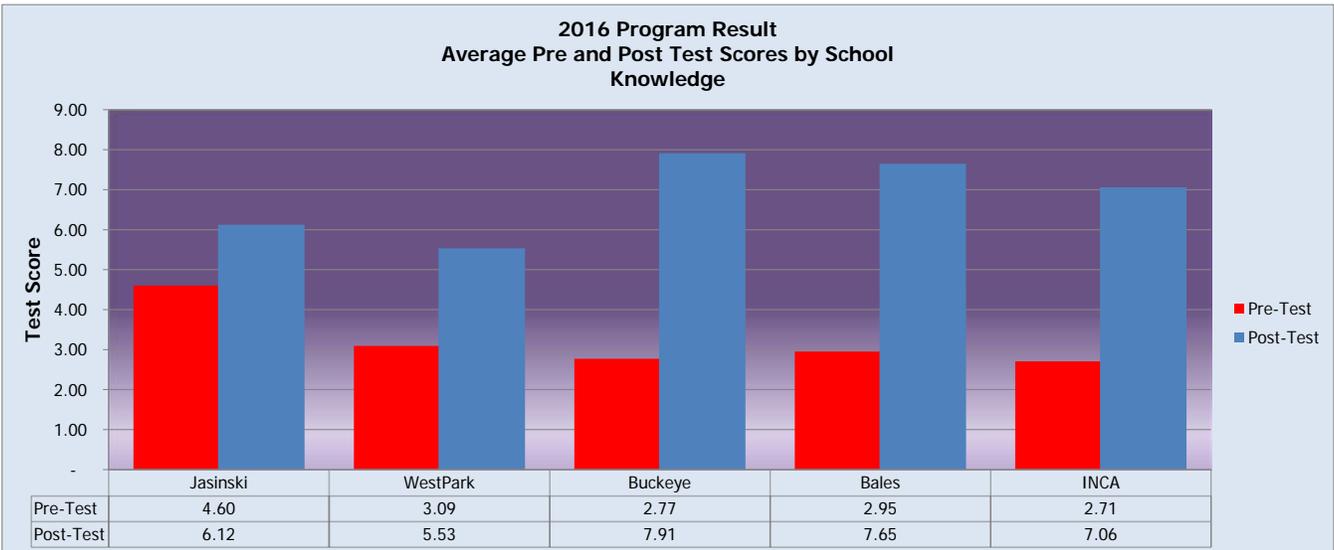


Exhibit 3
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

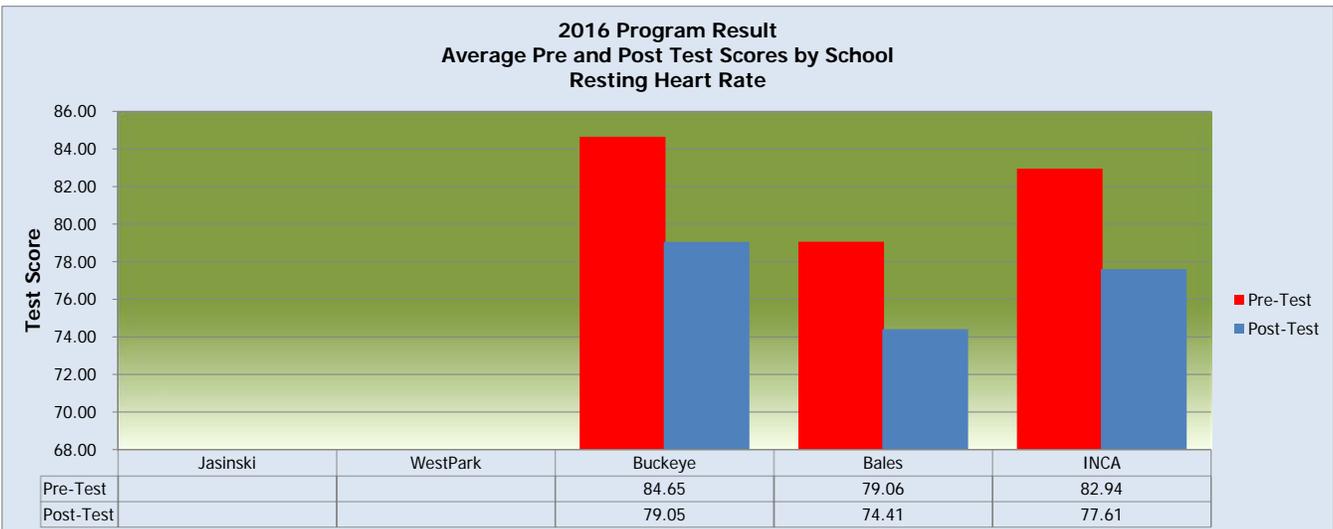
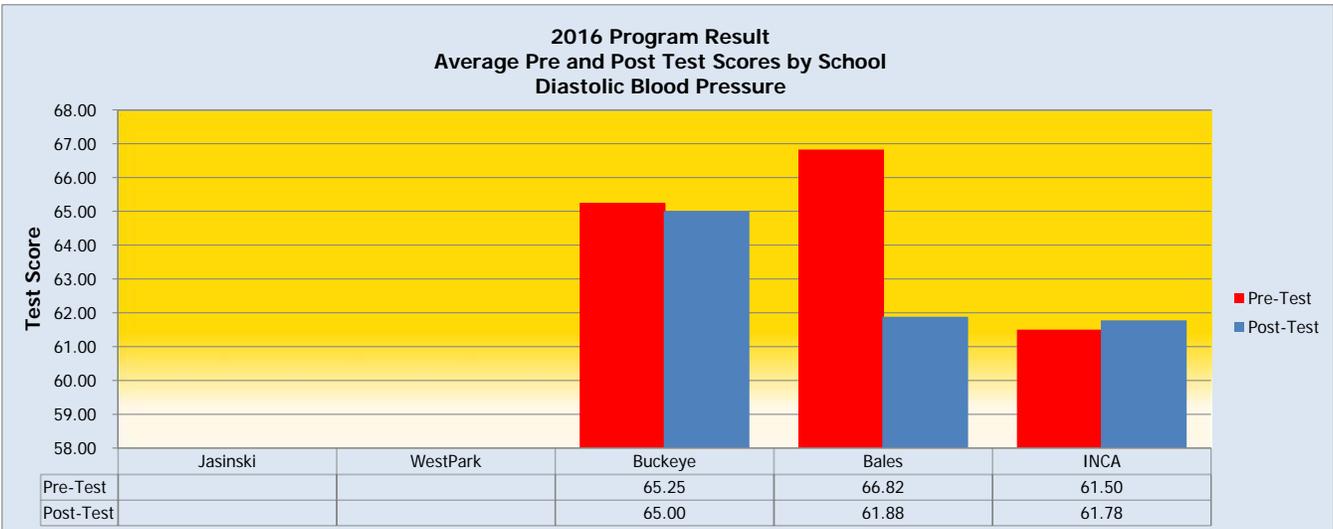
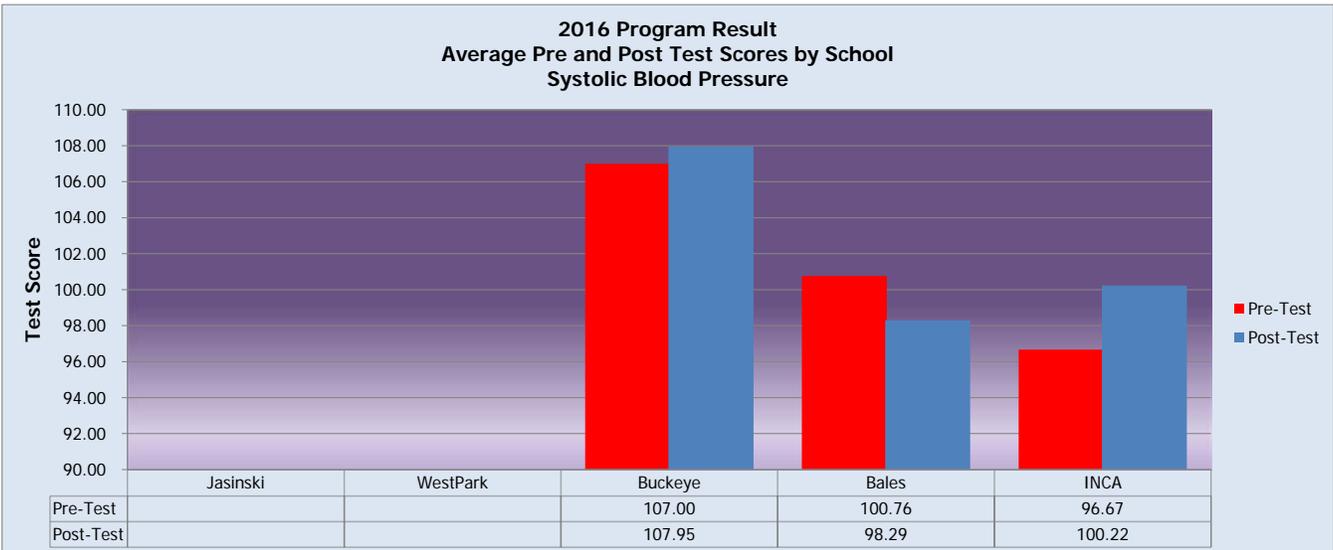


Exhibit 4
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

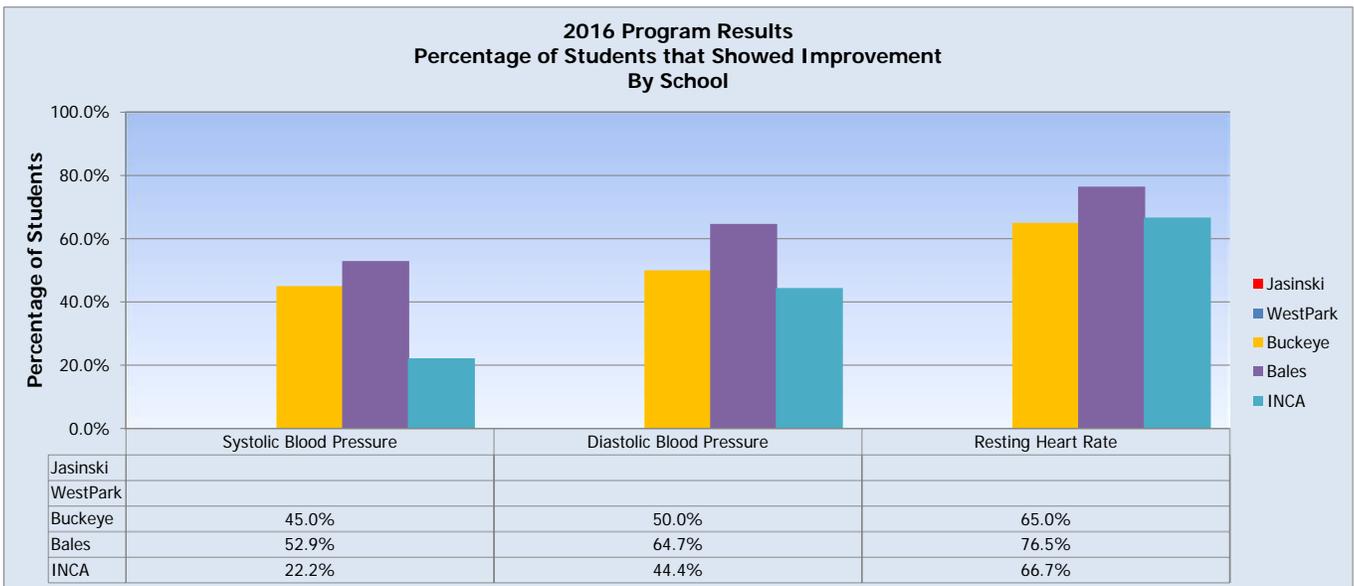
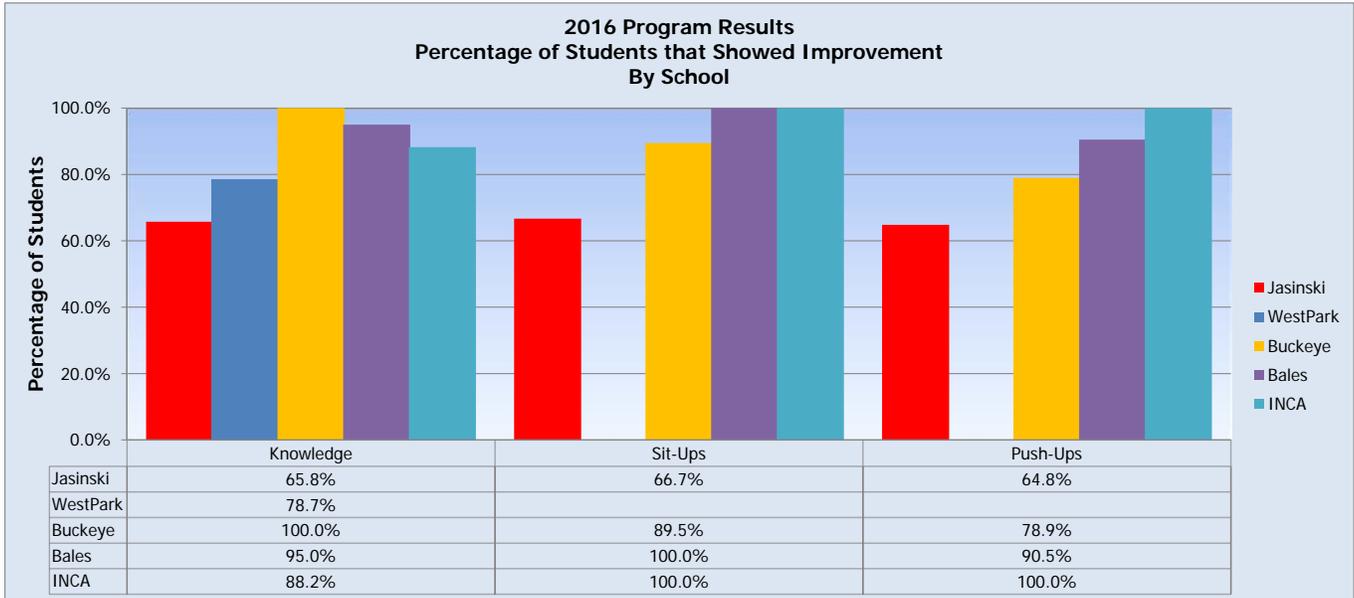


Exhibit 5
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Pre & Post Test Scores for Knowledge of Nutrients

School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski	73	4.60	6.12	1.52	33.0%
WestPark	75	3.09	5.53	2.44	78.9%
Buckeye	22	2.77	7.91	5.14	185.2%
Bales	20	2.95	7.65	4.70	159.3%
INCA	17	2.71	7.06	4.35	160.9%
Total	207	3.55	6.32	2.78	78.3%

Exhibit 6
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Pre & Post Test Scores for Push-Ups

School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski	54	1.96	3.43	1.46	74.5%
WestPark					
Buckeye	19	11.11	15.42	4.32	38.9%
Bales	21	6.52	11.67	5.14	78.8%
INCA	18	9.72	16.06	6.33	65.1%
Total	112	5.62	9.04	3.42	60.9%

Pre & Post Test Scores for Sit-Ups

School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski	54	3.39	5.30	1.91	56.3%
WestPark					
Buckeye	19	20.42	41.68	21.26	104.1%
Bales	21	8.67	28.86	20.19	233.0%
INCA	18	10.67	28.61	17.94	168.2%
Total	112	8.44	19.63	11.20	132.7%

Exhibit 7
Operation Tone-Up
2016 Program Evaluation
Arizona Schools

Pre & Post Test Scores for Systolic Blood Pressure

School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	20	107.00	107.95	0.95	0.9%
Bales	17	100.76	98.29	-2.47	-2.5%
INCA	18	96.67	100.22	3.56	3.7%
Total	55	101.69	102.44	0.75	0.7%

Pre & Post Test Scores for Diastolic Blood Pressure

School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	20	65.25	65.00	-0.25	-0.4%
Bales	17	66.82	61.88	-4.94	-7.4%
INCA	18	61.50	61.78	0.28	0.5%
Total	55	64.51	62.98	-1.53	-2.4%

Pre & Post Test Scores for Resting Heart Rate

School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	20	84.65	79.05	-5.60	-6.6%
Bales	17	79.06	74.41	-4.65	-5.9%
INCA	18	82.94	77.61	-5.33	-6.4%
Total	55	82.36	77.15	-5.22	-6.3%

Exhibit 8
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Pre & Post Test Scores by Systolic Blood Pressure Range

Systolic Pre Test Range	Student Count	<u>Systolic Blood Pressure</u>		(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
		(a) Pre Test Mean Score	(b) Post Test Mean Score		
0 < X ≤ 114	48	98.38	101.38	3.00	3.0%
114 < X ≤ 125	4	119.25	106.50	-12.75	-10.7%
> 125	3	131.33	114.00	-17.33	-13.2%
Total	55	101.69	102.44	0.75	0.7%

Pre & Post Test Scores by Diastolic Blood Pressure Range

Diastolic Pre Test Range	Student Count	<u>Diastolic Blood Pressure</u>		(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
		(a) Pre Test Mean Score	(b) Post Test Mean Score		
0 < X ≤ 75	45	60.40	61.49	1.09	1.8%
75 < X ≤ 85	7	79.71	69.14	-10.57	-13.3%
> 85	3	90.67	71.00	-19.67	-21.7%
Total	55	64.51	62.98	-1.53	-2.4%

Pre & Post Test Scores by Resting Heart Rate Range

RHR Pre Test Range	Student Count	<u>Resting Heart Rate</u>		(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
		(a) Pre Test Mean Score	(b) Post Test Mean Score		
0 < X ≤ 80	26	71.88	71.23	-0.65	-0.9%
80 < X ≤ 100	24	88.96	82.04	-6.92	-7.8%
> 100	5	105.20	84.40	-20.80	-19.8%
Total	55	82.36	77.15	-5.22	-6.3%

Exhibit 9
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Systolic Blood Pressure Range $0 < X \leq 114$

Systolic Blood Pressure (Pre Test Score less than or equal to 114)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	15	101.60	106.87	5.27	5.2%
Bales	16	99.56	97.44	-2.13	-2.1%
INCA	17	94.41	100.24	5.82	6.2%
Total	48	98.38	101.38	3.00	3.0%

Systolic Blood Pressure Range $114 < X \leq 125$

Systolic Blood Pressure (Pre Test Score less than or equal to 125 and greater than 114)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	3	119.00	104.67	-14.33	-12.0%
Bales	1	120.00	112.00	-8.00	-6.7%
INCA					
Total	4	119.25	106.50	-12.75	-10.7%

Systolic Blood Pressure Range > 125

Systolic Blood Pressure (Pre Test Score greater than 125)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	2	129.50	121.00	-8.50	-6.6%
Bales					
INCA	1	135.00	100.00	-35.00	-25.9%
Total	3	131.33	114.00	-17.33	-13.2%

Exhibit 10
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Diastolic Blood Pressure Range $0 < X \leq 75$

Diastolic Blood Pressure (Pre Test Score less than or equal to 75)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	15	59.60	63.13	3.53	5.9%
Bales	13	61.69	58.38	-3.31	-5.4%
INCA	17	60.12	62.41	2.29	3.8%
Total	45	60.40	61.49	1.09	1.8%

Diastolic Blood Pressure Range $75 < X \leq 85$

Diastolic Blood Pressure (Pre Test Score less than or equal to 85 and greater than 75)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	4	80.00	71.25	-8.75	-10.9%
Bales	2	76.50	74.00	-2.50	-3.3%
INCA	1	85.00	51.00	-34.00	-40.0%
Total	7	79.71	69.14	-10.57	-13.3%

Diastolic Blood Pressure Range > 85

Diastolic Blood Pressure (Pre Test Score greater than 85)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	1	91.00	68.00	-23.00	-25.3%
Bales	2	90.50	72.50	-18.00	-19.9%
INCA					
Total	3	90.67	71.00	-19.67	-21.7%

Exhibit 11
 Operation Tone-Up
 2016 Program Evaluation
 Arizona Schools

Resting Heart Rate Range $0 < X \leq 80$

Resting Heart Rate (Pre Test Score less than or equal to 80)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	8	74.50	73.88	-0.63	-0.8%
Bales	9	70.78	67.89	-2.89	-4.1%
INCA	9	70.67	72.22	1.56	2.2%
Total	26	71.88	71.23	-0.65	-0.9%

Resting Heart Rate Range $80 < X \leq 100$

Resting Heart Rate (Pre Test Score less than or equal to 80 and greater than 100)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	10	88.80	83.10	-5.70	-6.4%
Bales	7	86.29	81.00	-5.29	-6.1%
INCA	7	91.86	81.57	-10.29	-11.2%
Total	24	88.96	82.04	-6.92	-7.8%

Resting Heart Rate Range > 100

Resting Heart Rate (Pre Test Score greater than 100)					
School	Student Count	(a) Pre Test Mean Score	(b) Post Test Mean Score	(c) = (b) - (a) Mean Change	(d) = (c) / (a) Mean % Change
Jasinski WestPark					
Buckeye	2	104.50	79.50	-25.00	-23.9%
Bales	1	103.00	87.00	-16.00	-15.5%
INCA	2	107.00	88.00	-19.00	-17.8%
Total	5	105.20	84.40	-20.80	-19.8%

Appendix A
Operation Tone-Up
2016 Program Evaluation
Arizona Schools
Statistical Tests

Test and Confidence Interval for Paired t-Test

Program Indicator	Sample Size	Mean	Standard Deviation	Standard Error Mean	Paired t-Statistic	Degrees of Freedom	P-Value (less than)	99.8% Confidence Interval of Difference	
								Lower	Upper
Knowledge of Nutrients	207	2.778	2.689	0.187	14.861	206	0.001	2.193	3.363
Sit-Ups	112	11.196	13.804	1.304	8.584	111	0.001	7.068	15.325
Push-Ups	112	3.420	4.341	0.410	8.338	111	0.001	2.122	4.718
Systolic Blood Pressure	55	0.745	10.350	1.396	0.534	54	>.05	-3.787	5.278
Diastolic Blood Pressure	55	-1.527	11.432	1.542	0.991	54	>.05	-6.534	3.480
Resting Heart Rate	55	-5.218	9.299	1.254	4.162	54	0.001	-9.291	-1.146

Knowledge of Nutrients

H0: Mean Post Test Score is less than or equal to the Mean Pre Test Score

Ha: Mean Post Test Score is greater than the Mean Pre Test Score

The difference between the mean Pre Test Score and the mean Post Test Score was significant at the 0.001 level.

We reject the H0; there was sufficient evidence to conclude that the average score for Knowledge of Nutrients improved as a result of the Operation Tone-Up Program.

Sit-Ups

H0: Mean Post Test Score is less than or equal to the Mean Pre Test Score

Ha: Mean Post Test Score is greater than the Mean Pre Test Score

The difference between the mean Pre Test Score and the mean Post Test Score was significant at the 0.001 level.

We reject the H0; there was sufficient evidence to conclude that the average score for Sit-Ups improved as a result of the Operation Tone-Up Program.

Push-Ups

H0: Mean Post Test Score is less than or equal to the Mean Pre Test Score

Ha: Mean Post Test Score is greater than the Mean Pre Test Score

The difference between the mean Pre Test Score and the mean Post Test Score was significant at the 0.001 level.

We reject the H0; there was sufficient evidence to conclude that the average score for Push-Ups improved as a result of the Operation Tone-Up Program.

Systolic Blood Pressure

H0: Mean Post Test Score is greater than or equal to the Mean Pre Test Score

Ha: Mean Post Test Score is less than the Mean Pre Test Score

The difference between the mean Pre Test Score and the mean Post Test Score was not significant at the 0.05 level.

We do not reject the H0; there was not sufficient evidence to conclude that the average score for Systolic Blood Pressure improved as a result of the Operation Tone-Up Program.

Diastolic Blood Pressure

H0: Mean Post Test Score is greater than or equal to the Mean Pre Test Score

Ha: Mean Post Test Score is less than the Mean Pre Test Score

The difference between the mean Pre Test Score and the mean Post Test Score was not significant at the 0.05 level.

We do not reject the H0; there was not sufficient evidence to conclude that the average score for Diastolic Blood Pressure improved as a result of the Operation Tone-Up Program.

Resting Heart Rate

H0: Mean Post Test Score is greater than or equal to the Mean Pre Test Score

Ha: Mean Post Test Score is less than the Mean Pre Test Score

The difference between the mean Pre Test Score and the mean Post Test Score was significant at the 0.001 level.

We do not reject the H0; there was not sufficient evidence to conclude that the average score for Resting Heart Rate improved as a result of the Operation Tone-Up Program.