

# Marion County Fire Rescue Wellness Program



Presented by: Adam C. Geril, MS, PT, OCS, ATC

A program modeled after LAFD's Wellness initiative.

Special thanks to: Deputy Chief-John Callahan-LAFD.  
Currently Chief of the San Luis Obispo Fire Department

Steven Loy, PhD-University of California @ North Ridge

# Review

- ◆ Mid January - Education of FireFighter Tester/Instructors
- ◆ Formation of Health and Wellness Team
- ◆ February – Began 1<sup>st</sup> Qtr Testing



# Obstacles

- ✦ Communication to the field as to the programs purpose was spotty. Acceptance was guarded
- ✦ Issue with Tester/Instructor Payroll and Scheduling.
- ✦ Issues with testers being unavailable to participate
  - Lost a few from the wellness team
- ✦ Preliminary findings suggest issues with BP
- ✦ Firefighters who were found to be hypertensive were sent to the clinic. Acceptance of program more guarded

# Obstacles

- ✦ Release form to be signed was adverse to some firefighters secondary to fear of PMH exposed.
  - Unrealistic



# Support

- ✦ Emails to the field from:
  - Chief Walker
  - Chief McElhaney
  - Medical Director- Dr. Michael Webb, MD
  - President of the FireFighters Union- Lt. Robert Graff
- ✦ Complete participation of Battalion Chief Angela Tutino.

# Presentation of First Quarter Results

- ◆ Identified variables very similar to National averages published by:
  - National Firefighter fatality data base
  - CDC



# Preliminary Findings

## Weight N=186

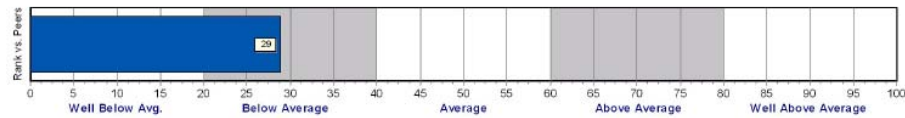
Avg. Result: 194.5 Lbs

## Siconolfi Step Test N=186

Avg. Result: 34.6 Mkm

Avg. Rank: 29

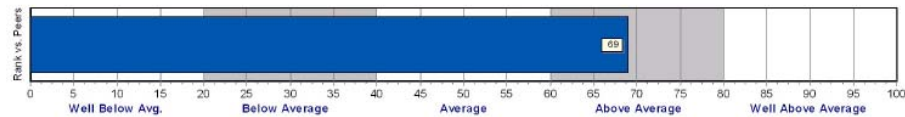
Vol O2: 3.0 l/min



## Push-Up Test N=186

Avg. Result: 33 Rep

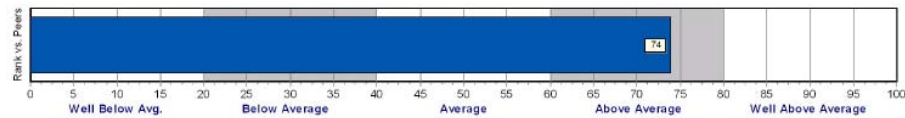
Avg. Rank: 69



## 1 Minute Timed Situps N=186

Avg. Result: 47 Rep

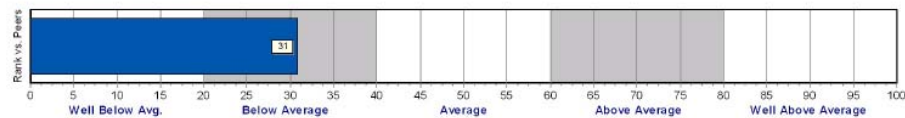
Avg. Rank: 74



## Sit-Reach Hip Flexion N=186

Avg. Result: 11.97 In

Avg. Rank: 31



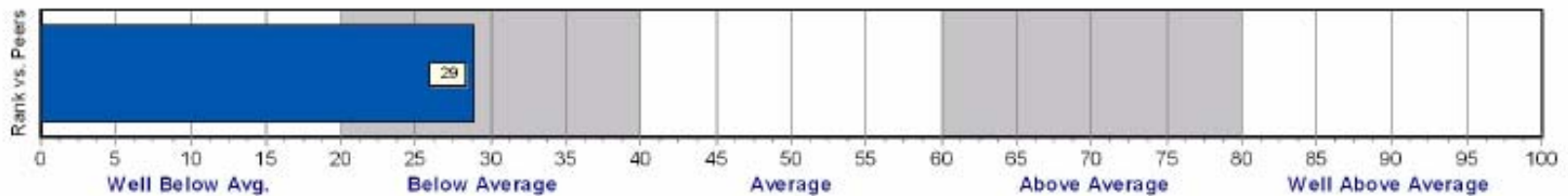
# Preliminary Findings

## Pull-Ups

N=186

Avg. Result: 5 Rep

Avg. Rank: 29

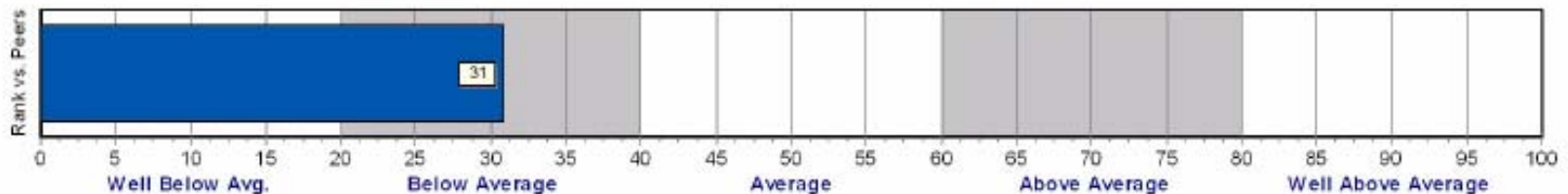


## Body Mass Index

N=186

Avg. Result: 27.3

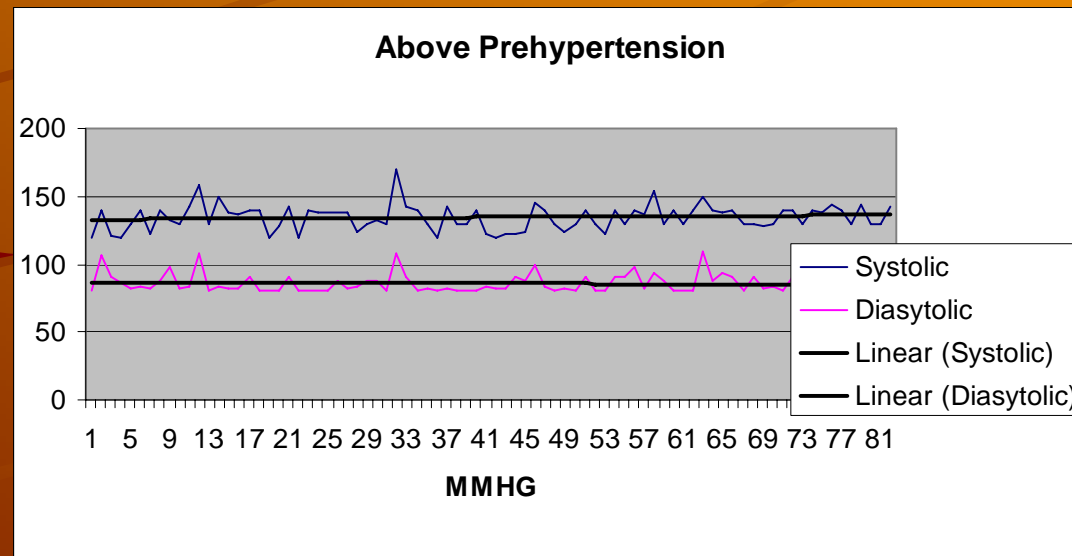
Avg. Rank: 31





# Current Concern

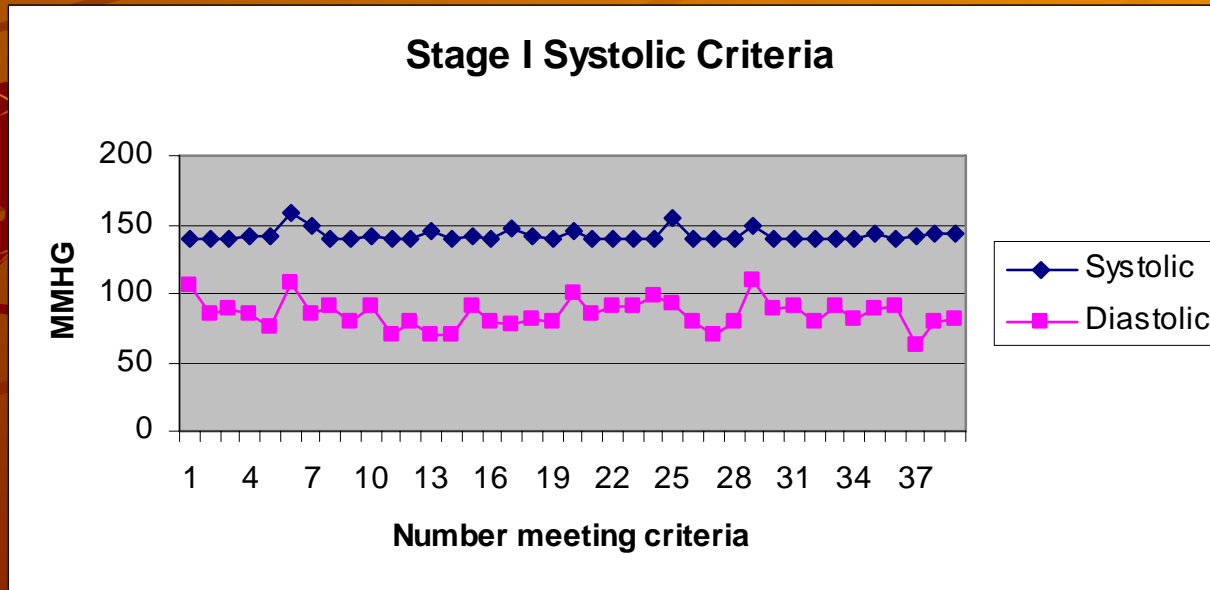
- ◆ Out of an N=186
- ◆ 82 Firefighters at or above PreHypertensive values.
- ◆ 82 or 44%



# Stage I Hypertension

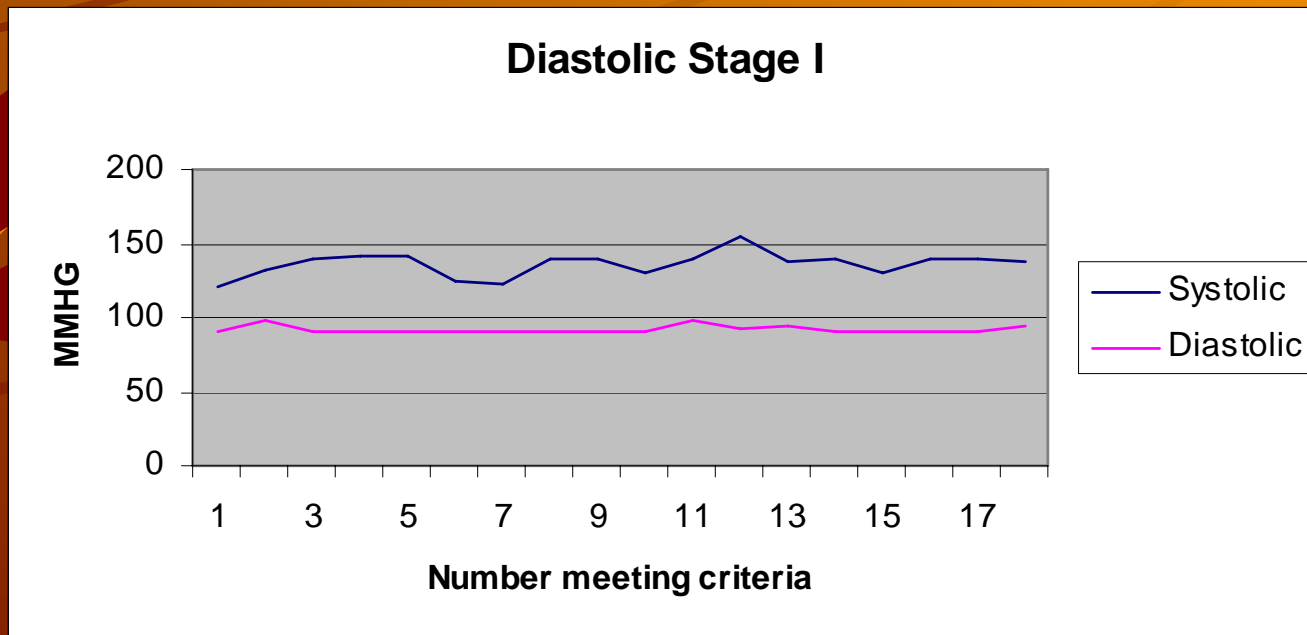
◆ N=186

◆ 39 with BP between 140-159 Systolic 21%



# Stage I Hypertension Cont'd

- ◆ Diastolic between 90-99mmhg
- ◆ N=186
- ◆ 18 or 10%



# Stage II Hypertension

- ◆ N = 186
- ◆ 1 meets criteria for systolic
- ◆ 5 meets criteria for diastolic
- ◆ 6 total or 3%



# Body Mass Index

- ✦ The Body Mass Index measure provides an estimate of fatness from height and weight. Its simplicity and low cost make it most applicable in situations where a large number of people are being tested.
- ✦ "The Quetelet index or  $\text{kg}/\text{m}^2$  (body weight in kilograms divided by height in metres squared) is the most widely accepted BMI. Studies have shown that the Quetelet index correlates rather well ( $r = 0.70$ ) with actual measurement of body fat from hydrostatic weighing -better than it does with relativeweight calculations or height-weight tables and body fat.
- ✦ **MCFR with BMI  $> 30 \text{ kg}/\text{m}^2 = 80$  or 43%**
- ✦ **Ave Age = 35.6**

# Flexibility

- ✦ 76 or 41% of those tested have the flexibility equal to or less than the 50 percentile for a 65 y.o. man.
- ✦ Potential results in muscular injury.....!!!



# Review

- ◆ Completion of 1<sup>st</sup> quarter through second quarter. Consistent Testers: Captain Joe Amigliore, Chief Angela Tutino, Adam Geril, Exercise Physiologist, other Team members were hit and Miss.
- ◆ 2<sup>nd</sup> Quarter Testing – New Methodology for Testing.
  - Selected Testers for Health and Wellness Program by Senior Management as well as remaining Health and Wellness Team

# New Health and Wellness Team

District Captain

Health and Wellness Officer  
Exercise Physiologist

A-Shift  
Lieutenant

B-Shift  
Lieutenant

C-Shift  
Lieutenant





# Policy to deal with HTN discovered pre testing

- ◆ If HTN discovered the testee is allowed to rest for 30 minutes and BP taken several times through out.
- ◆ If BP below Stage I-testing continues
- ◆ If not, District Captain over testing is notified, Battalion Chief is notified, Health and Wellness Officer is notified. No decision is to be made alone.
- ◆ Individual will not be tested, and follow the same procedure as in first quarter.

# Three areas identified for MCFR

- ◆ Cardiovascular endurance
- ◆ Upper extremity flexion strength
- ◆ Flexibility



# Second Quarter Data

## Weight

**Initial Test:** Avg: 193.5 Lbs

N=110

**Re-Test:** Avg: 193.5 Lbs

N=110

## Body Mass Index

**Initial Test:** Avg: 27.6

Avg. Rank: 28

N=110

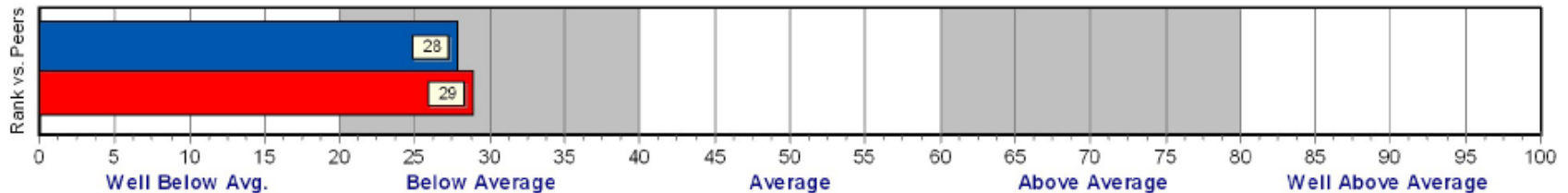
**Re-Test:** Avg: 27.6

Avg. Rank: 29

N=110

**Change in Raw Value: No Change**

**Change in Rank: 4% Improvement**



# Second Quarter Data Review

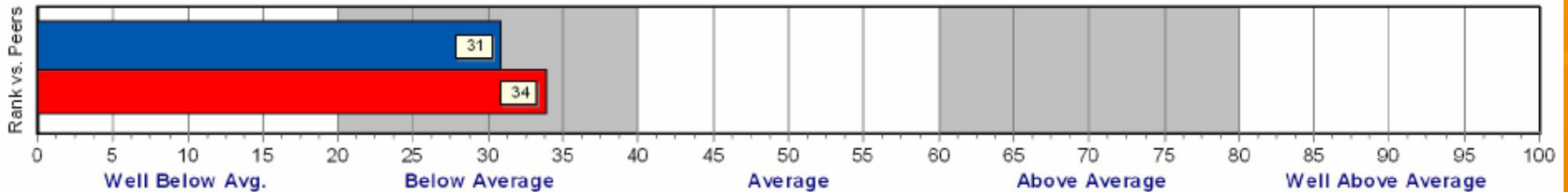
## Siconolfi Step Test

**Initial Test:** Avg: 36.6 Mkm    Avg. Rank: 31    Vol O2: 3.1 l/min    N=110

**Re-Test:** Avg: 37.4 Mkm    Avg. Rank: 34    Vol O2: 3.2 l/min    N=110

**Change in Raw Value: 2% Better**

**Change in Rank: 10% Improvement**



# Second Quarter Comparison

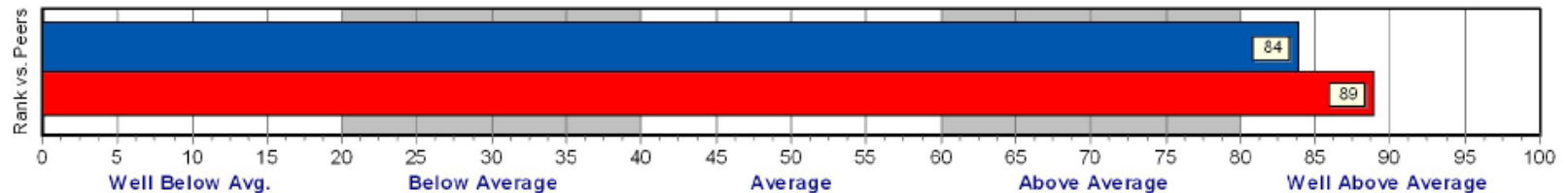
## 1 Minute Timed Situps

**Initial Test:** Avg: 53 Rep Avg. Rank: 84 N=110

**Re-Test:** Avg: 62 Rep Avg. Rank: 89 N=110

**Change in Raw Value: 17% Better**

**Change in Rank: 6% Improvement**



# Second Comparison

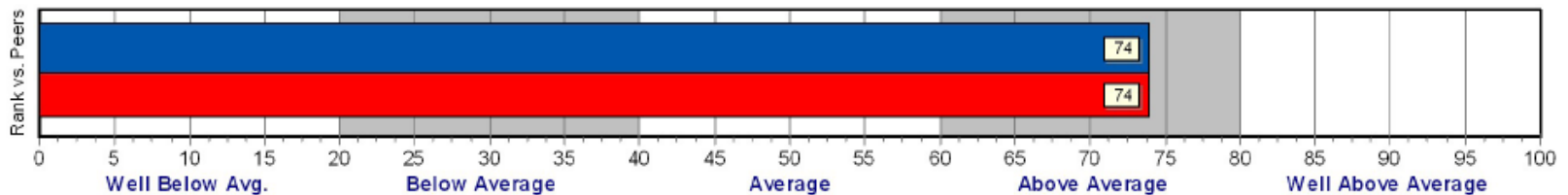
## Push-Up Test

**Initial Test:** Avg: 36 Rep      Avg. Rank: 74      N=110

**Re-Test:** Avg: 38 Rep      Avg. Rank: 74      N=110

**Change in Raw Value: 6% Better**

**Change in Rank: No Change**



# Second Quarter comparison

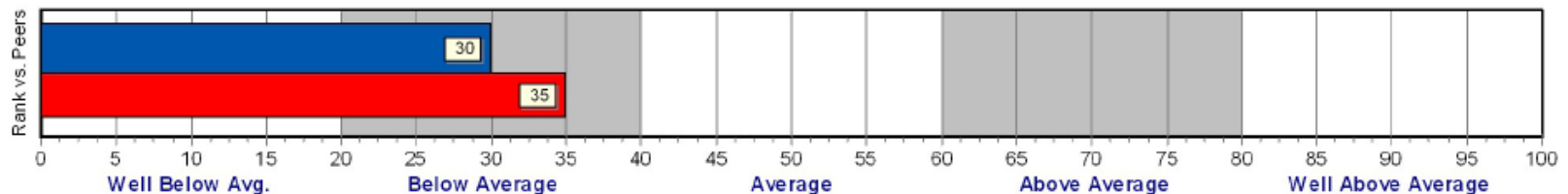
## Pull-Ups

**Initial Test:** Avg: 5 Rep      Avg. Rank: 30      N=110

**Re-Test:** Avg: 6 Rep      Avg. Rank: 35      N=110

**Change in Raw Value: 19% Better**

**Change in Rank: 17% Improvement**



# Second Quarter comparison

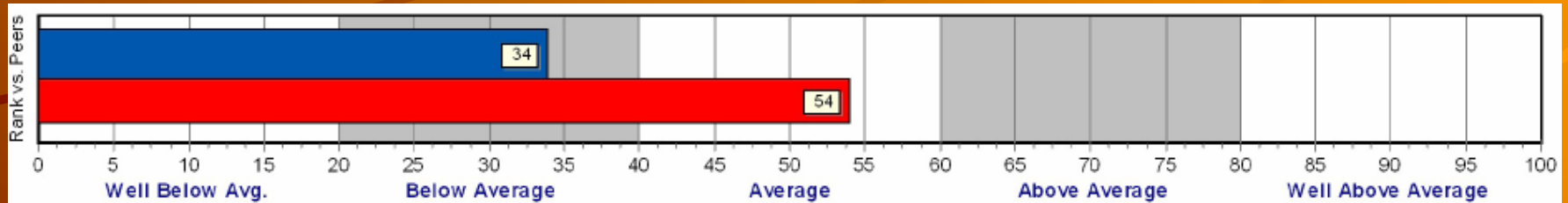
## Sit-Reach Hip Flexion

**Initial Test:** Avg: 12.84 In      Avg. Rank: 34      N=110

**Re-Test:** Avg: 16.33 In      Avg. Rank: 54      N=110

**Change in Raw Value: 27% Better**

**Change in Rank: 59% Improvement**





# Despite Obstacles

- ✦ Progress was made in all three critical areas identified in the first quarter data.
- ✦ This is most likely due to bench marking and educating the firefighters as to where they stand relative to National Numbers.



# What are others doing

## ◆ **Wellness for Public Safety Personnel**

- ◆ The job requirements of a public safety officer involve tasks that affect the safety and well being of the general public. Poor performance may result in the failure to apprehend a subject, property loss or damage, and injury or loss of life. Public safety officers encounter a great amount of job related stress, which can lead to poor health. Although it is not possible to change the dangers involved in public safety work, it is possible to change individual behaviors and work environments that affect the health and well being of officers.
- ◆ **A 14 year program of health and fitness of firefighters showed a 16% increase in physical work capacity. This same program showed that promoting the health fitness of firefighters is linked with a decrease in injury.**
- ◆ A 6.5 week exercise program for police (including individual fitness evaluation, daily exercise supervision and counseling) showed a 14% decrease in total cholesterol, a 22% decrease in LDL cholesterol and a 17% decrease in the ratio of total cholesterol to HDL cholesterol.
- ◆ **A study involving firefighters to examine the effects of 6 months of flexibility training on the incidence and severity of joint injuries showed that the group of participants used less than half as many health care dollars as non-participants.**
- ◆ An intervention program involving a police force showed that weekly participation in supervised exercise reduced the number of sick days by an average of 4.8 days per person in a year following the start of the program.
  - Department of Public Health-Commonwealth of Massachusetts

# Outcomes

- ✦ To determine effectiveness of program we worked with the Department of Risk Management to look at the number of claims and their cost.



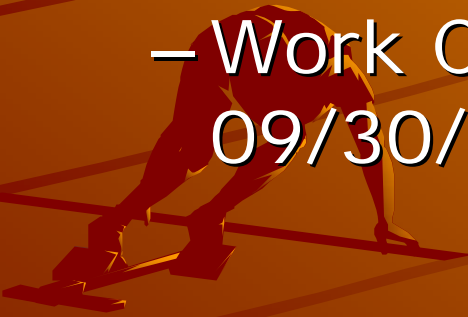
# Outcomes

## ◆ Comparisons of

– Work Comp Loss Run: 10/1/04 to  
09/30/05

◆ TO

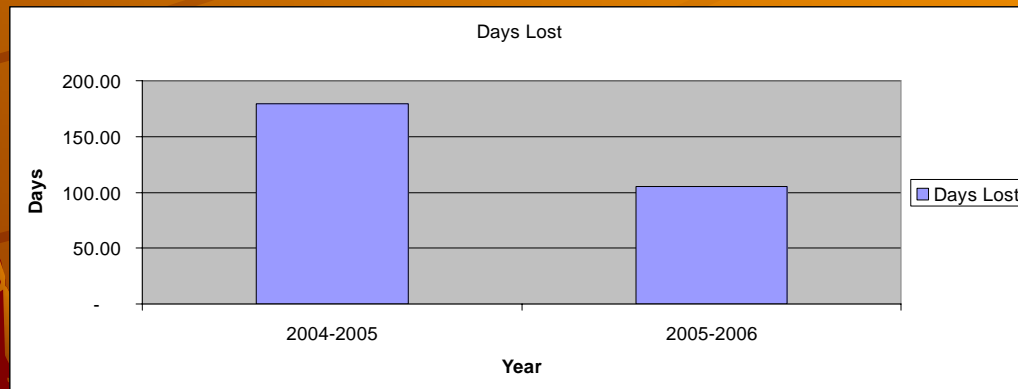
– Work Comp Loss Run: 10/1/05 to  
09/30/06.



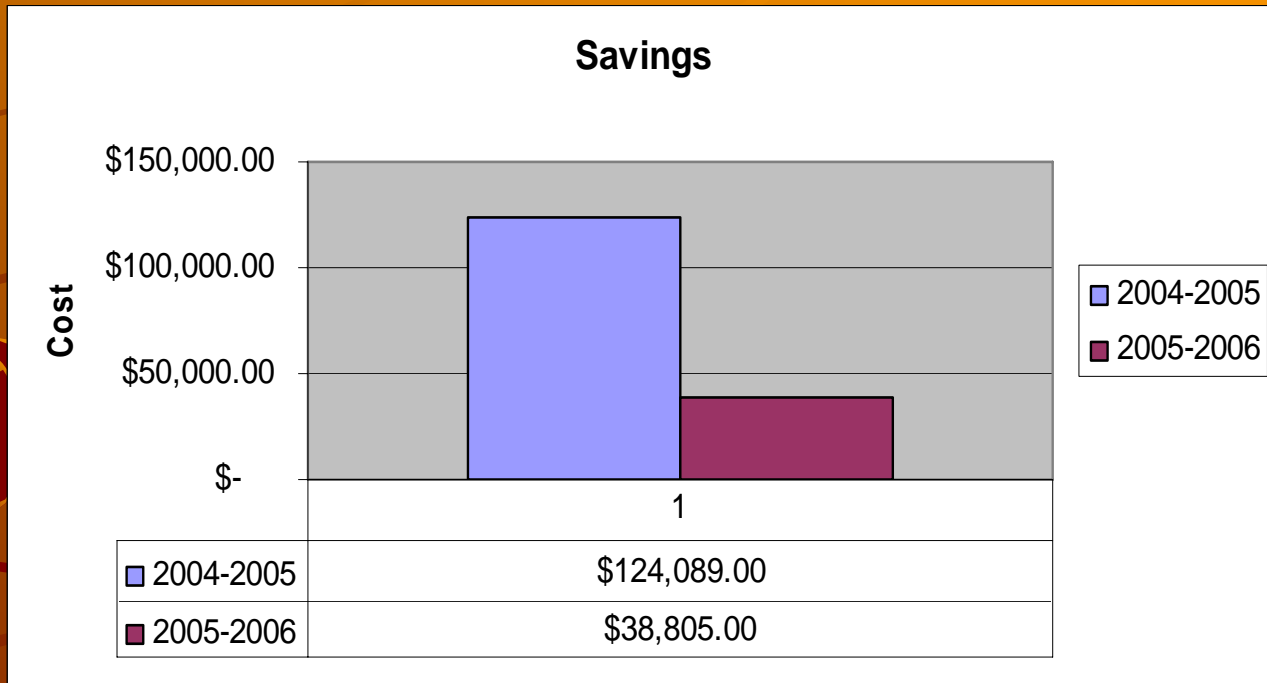
# Outcomes

<b>Time Frame</b>	<b>Days Lost</b>	<b>Cost</b>	<b>Unit # claims</b>
2004-2005	179	\$ 124,089.00	48
2005-2006	105	\$ 38,805.00	39
<b>Percentage Change</b>	41%	69%	19%
<b>Savings of</b>		<b>\$ 85,621.41</b>	

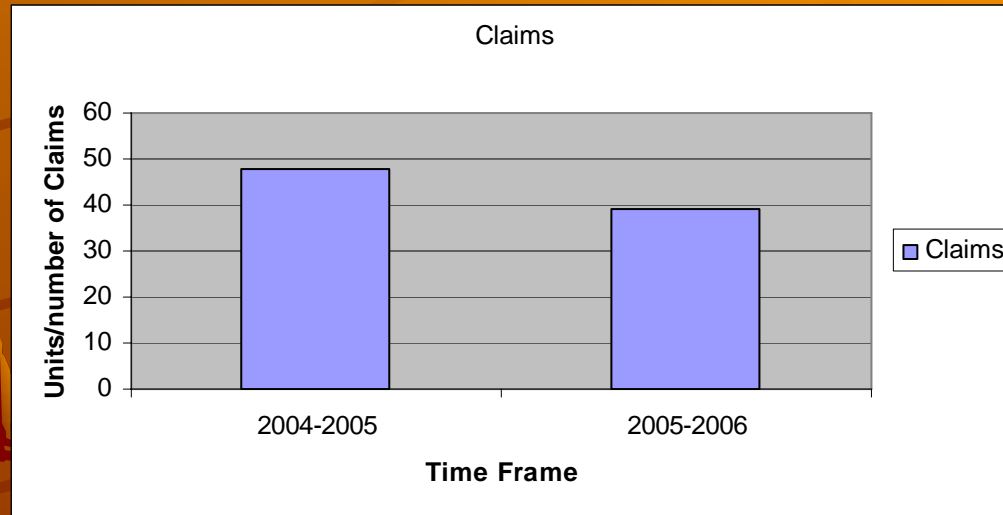
# Outcomes



# Outcomes

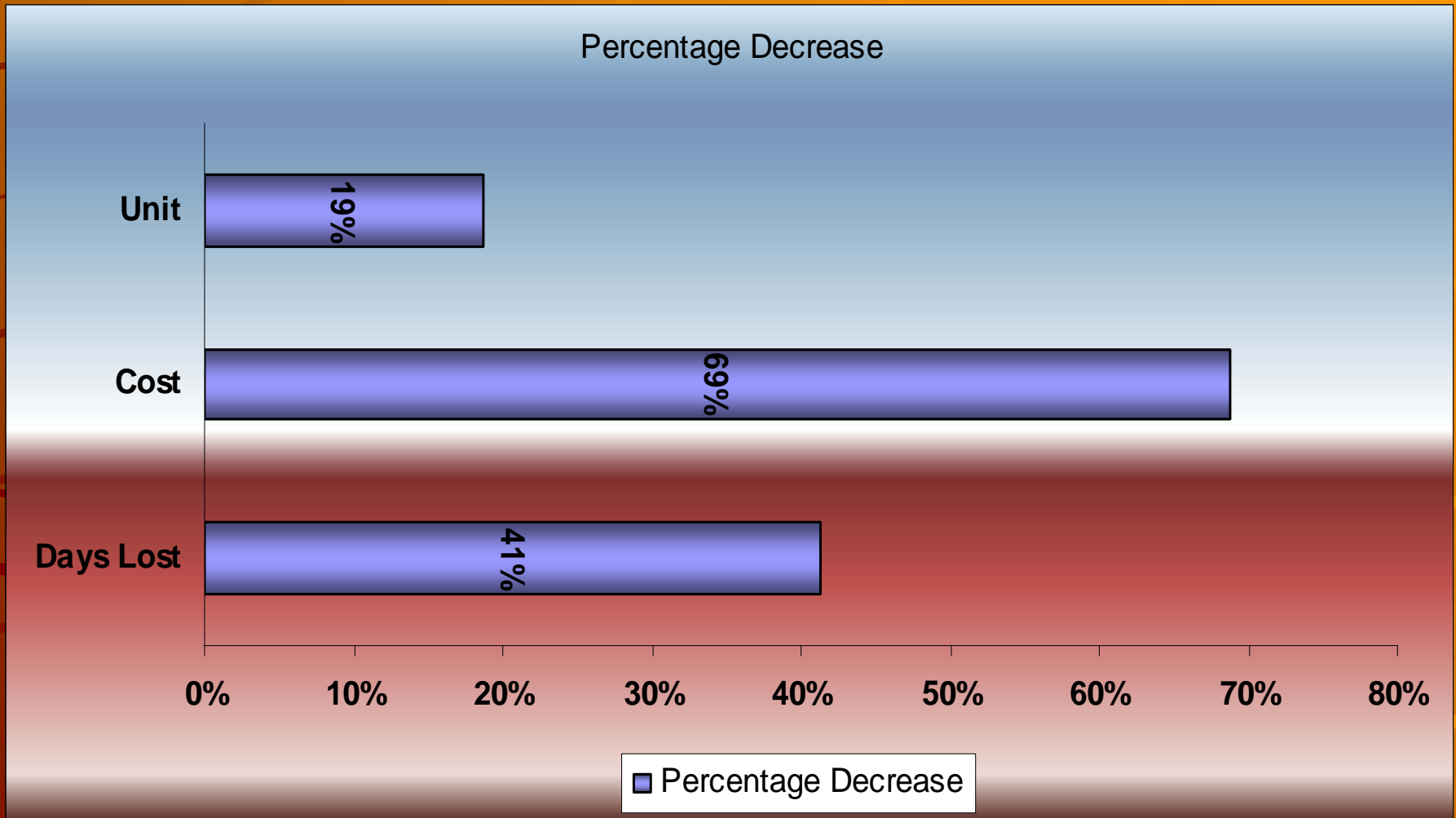


# Outcomes



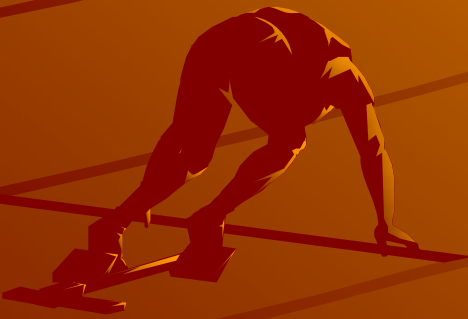


# Percentage Change



# Total Savings

📈 \$85,621.41



# Return on Investment

- ✦ For the \$40,000 investment of a ½ time Exercise Physiologist
  - A savings of \$85,000 was realized for a one year period of time.



# Future

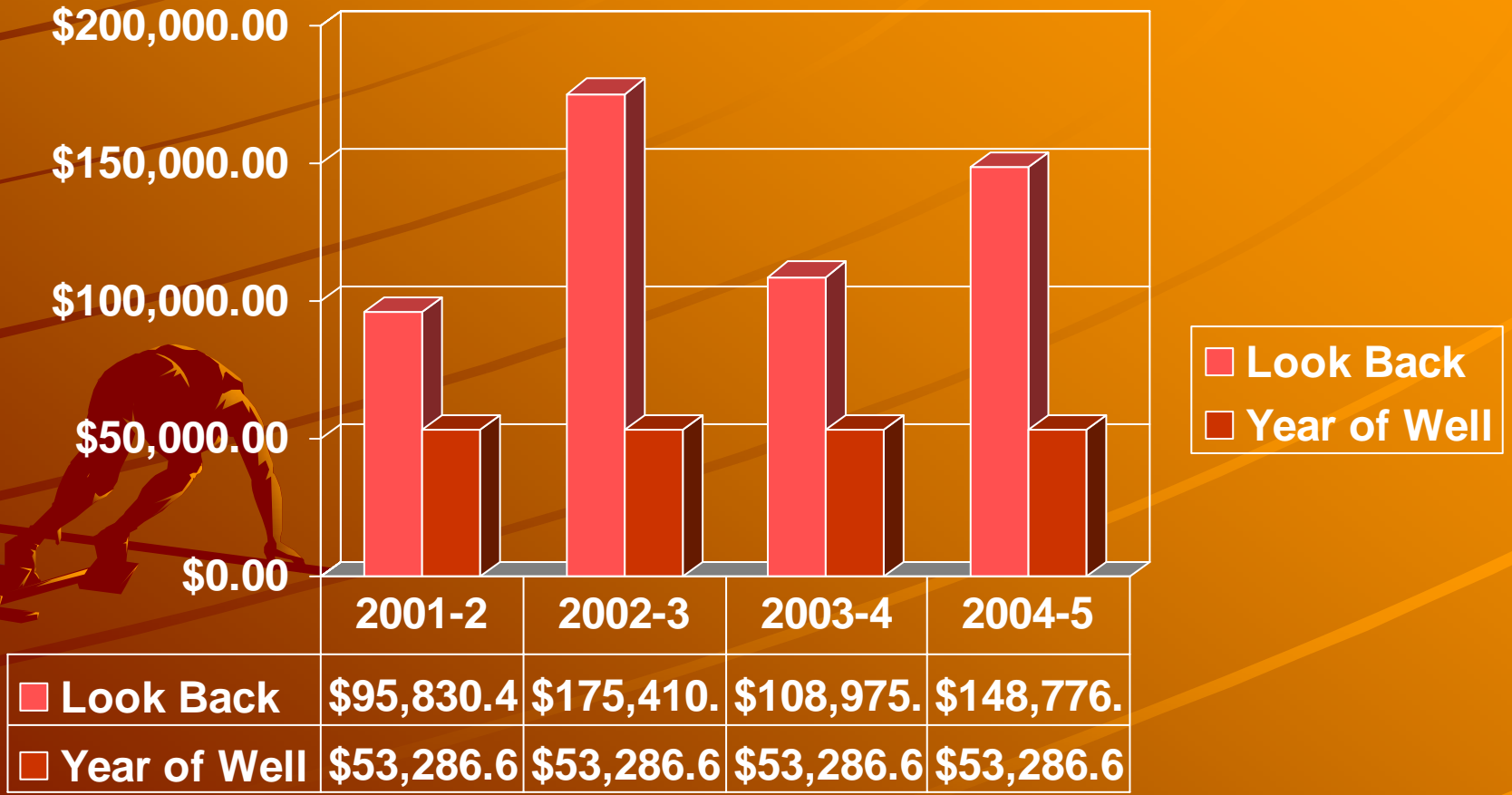
- ✦ For the following year an investment of a ½ time Exercise Physiologist:
  - Comparable savings relative to musculoskeletal health plus further savings will be realized in terms of cardiovascular health over time.



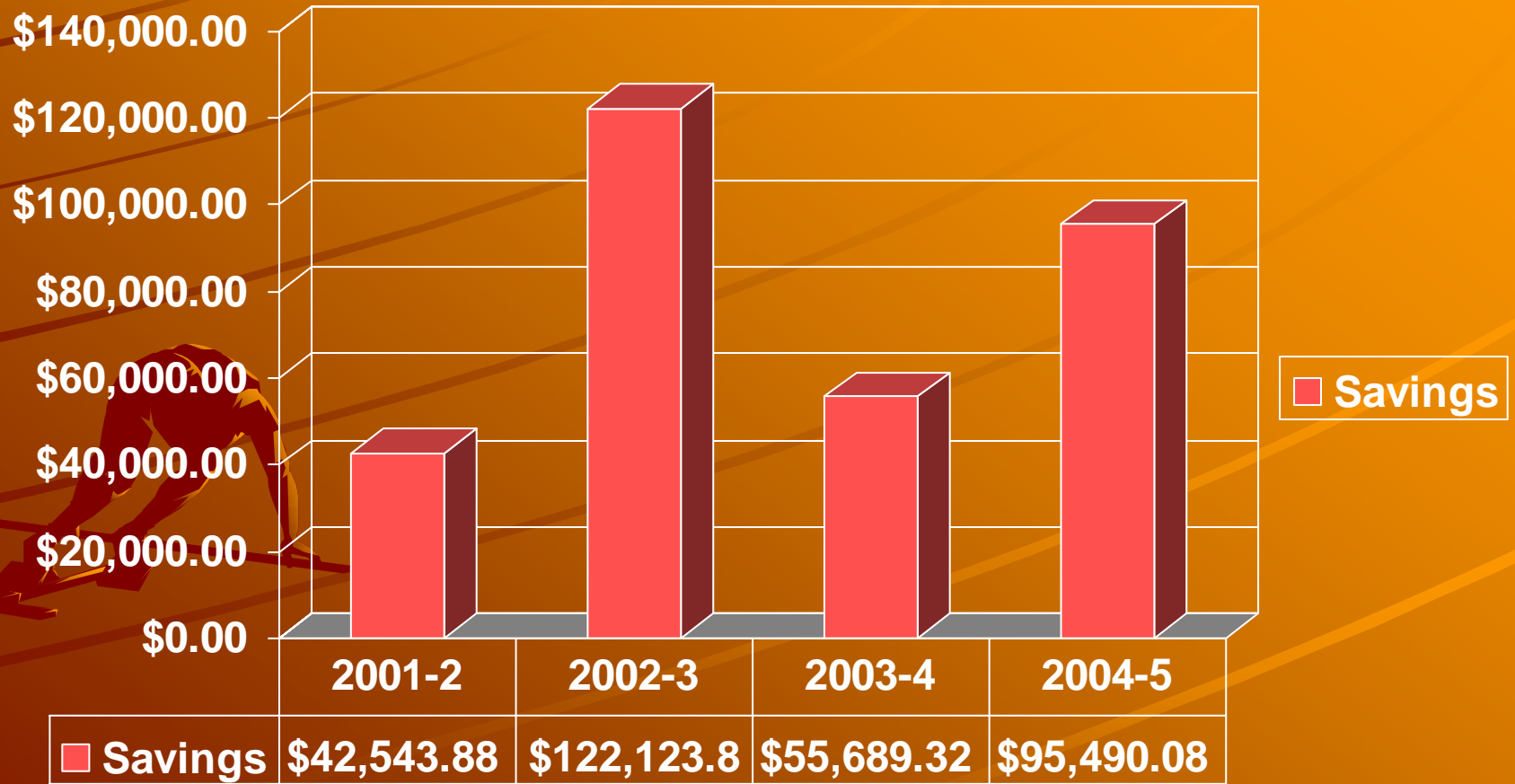
# Further research and projection

- ✦ Chief McElhaney made an astute observation and request. He wanted to make sure that the one year worth of data collection compared to previous year was not a fluke. He asked that we compare the one year worth of data to the last 5 years.

# Five Year Look Back (Work Comp Loss Run) Compared to Year of Wellness



# Savings per Year



# Total Savings

- ✦ Over a five year period the total savings inclusive of backfill costs, and excluding benefits is over a quarter of a million dollars (\$315,847.15).





# Special Thanks

- ◆ Chief Cooper-Deputy Chief-For conceptualizing this program
- ◆ Chief Bart Walker-For the support to the program and direction during its implementation.
- ◆ Chief McElhaney-For the support to the program with his leadership by example
- ◆ Captain Joe Amigliore-Health and Wellness Officer- For making introductions, facilitating and participating in quarterly testing.