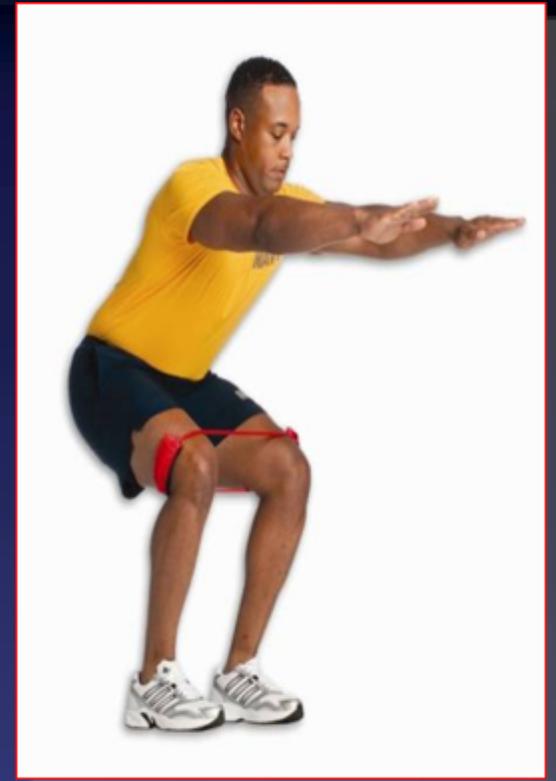


Navy Injury Prevention Current Practices & Initiatives



Diana Strock, MAT, ATC
Navy & Marine Corps Public Health Center
Center for Personal & Professional Development



Injury Impact

Injuries impose a greater ongoing negative impact on the health and readiness of the U.S. Armed Forces than any other category of medical complaint during peacetime & combat.

*Reference: Jones, B.H. and Hansen, B.C. (2000)
Am J. Prev Med, 18 (3S), p 16.)*



Navy & Marine Corps Public Health Center / CPPD

BUMEDINST 6110.13A / NMCPHC CO Shall:

- (1) Provide professional expertise to policy and decision-makers at ashore & afloat commands.**
- (2) Provide technical and programming assistance, clarification on injury prevention policy issues, & capacity building through training & on line resources.**
- (3) Identify best health (injury prevention) practices for individuals, worksites, & communities that are evidence-based & use appropriate resources.**



Navy & Marine Corps Public Health Center / CPPD

BUMEDINST 6110.13A / NMCPHC CO Shall:

- (4) Develop health promotion (injury prevention) programs & products for implementation & distribution throughout the DON.**
- (5) Present during health promotion meetings, conferences, courses, etc.**
- (6) Develop & maintain liaison with other government, non- government, & volunteer organizations involved in Health Promotion (injury prevention).**

Navy Operational Fitness & Fueling Series



Improving the Operational Performance of Sailors

LIFT – PUSH – PULL – CARRY

Movement Preparation, Multidirectional Movement Training,
Strength Training, Cardiovascular Training, Recovery Training
& Nutritional Fueling Strategies

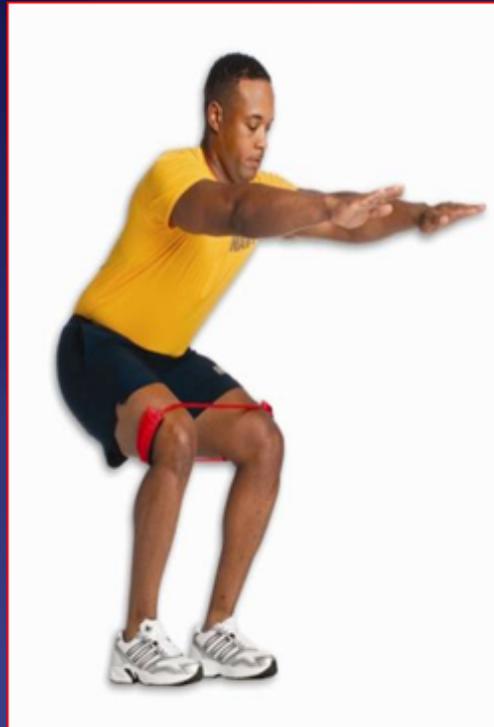


Operational Performance

Does the workout or activity relate to the demands on the job?

SPECIFICITY:

Physical training movements that mimic actual job related movements.





NOFFS: The Product

- Over 750 Sailors from 2nd & 3rd fleet assisted with development.
- Baseline Assessment:
 - Confined space issue
 - Equipment availability
 - Provides a “logic engine” for PT
 - “Eliminates the guesswork”
- Specialized Series For:
 - Submarines
 - Surface Ships
 - Large Decks
 - Group Physical Training

LARGE DECK SERIES
WARM UP & STRENGTH - LEVEL 2

Select 1 Strength Option:
★ **FIT KIT EQUIPMENT or FULL EQUIPMENT**

Stage:	A	B	C	D
Reps:	12	10	8	6

Option B: Strength - Full Equipment This strength option takes advantage of FULL EQUIPMENT using dumbbells and body weight as the primary source of resistance. This component designed to strengthen the movement needed to perform on an operational platform. Select a resistance that you feel challenged with and pay close attention to the quality of your movement.

	Circuit 1	Circuit 2
● Short	x2	x1
● Medium	x2	x2
● Long	x3	x2

Circuit 1

1

BENCH PRESS - ALTERNATING DUMBBELL



Keeping one arm straight, lower the other dumbbell until your arm just break parallel with the deck, then push it back up. Keep your nonworking arm straight with feet flat on the deck. Keep hips & shoulders on the bench during the movement. Alternate sides each rep.

Circuit 2

1

SQUAT TO OVERHEAD PRESS - DUMBBELL



Squat hips back & down until thighs are parallel with deck. Return to standing by pushing through your hips. At top of stance, press dumbbells straight overhead. Keep weight on arches and do not let knees collapse during the movement.

2

ROMANIAN DEADLIFT - 1 LEG DUMBBELL



Keep straight line from ear to ankle, hinge at waist & elevate your leg behind you. Return to the standing position by contacting your hamstring & glutes. Keep back flat, shoulder blades back & down during movement & keep the dumbbells close to your shin. Complete reps, repeat on opposite side.

2

LATERAL PILLAR BRIDGE - W/ ABDUCTION



Lie on side with forearm on deck, feet stacked together. Keep elbow under shoulder, push your hip off the deck, straight line from ankle to shoulder. Lift your top leg into the air as if you were doing a lateral jumping jack. Complete reps, repeat on opposite side.

3

SPLIT SQUAT - REAR FOOT ELEVATED DUMBBELLS



Place your back foot up onto a box or bench behind you. Drop hips towards deck by bending your front knee without letting your back knee touch the deck. Return to starting position by pushing up with your front hip. Complete reps on one leg, then switch legs & repeat.

3

CURL - KNEELING DUMBBELL



Start in kneeling position, holding dumbbells with arms at your sides. Keep elbows at your hips, lift dumbbells to shoulders as you rotate your palms to the ceiling. Keep your stomach & the glute muscles of your rear leg tight throughout the movement. Switch forward leg half way through the set.

4

BENT OVER ROW - 1 ARM 1 LEG DUMBBELL



Keep straight line from ear to ankle, hinge at waist & elevate your leg behind you. Slide shoulder blade toward, lift weight to body by driving elbow to ceiling. Keep your back level, stance leg slightly unlocked & shoulders parallel to the deck. Complete reps, repeat on opposite side.

4

CRUNCHES



Lie faceup with knees bent & hands across your chest. Lift chest up until shoulder blades are off the deck & rotate your pelvis towards your belly button. Slowly return to starting position & repeat for prescribed reps.



Purpose

To provide the Navy with a foundational and evidence – based performance training resource:

Focus of the product is

- 1: Improving operational performance (not just the PRT)
- 2: Decreasing the incidence/severity of musculoskeletal injuries
- 3: Foundational nutrition – the basics

Goal is to provide a complete physical training program that will “eliminate the guesswork” for the

- 1: Individual Sailor that is participating in his/her personal exercise and nutrition program
- 2: Tool for the Navy health and fitness professional

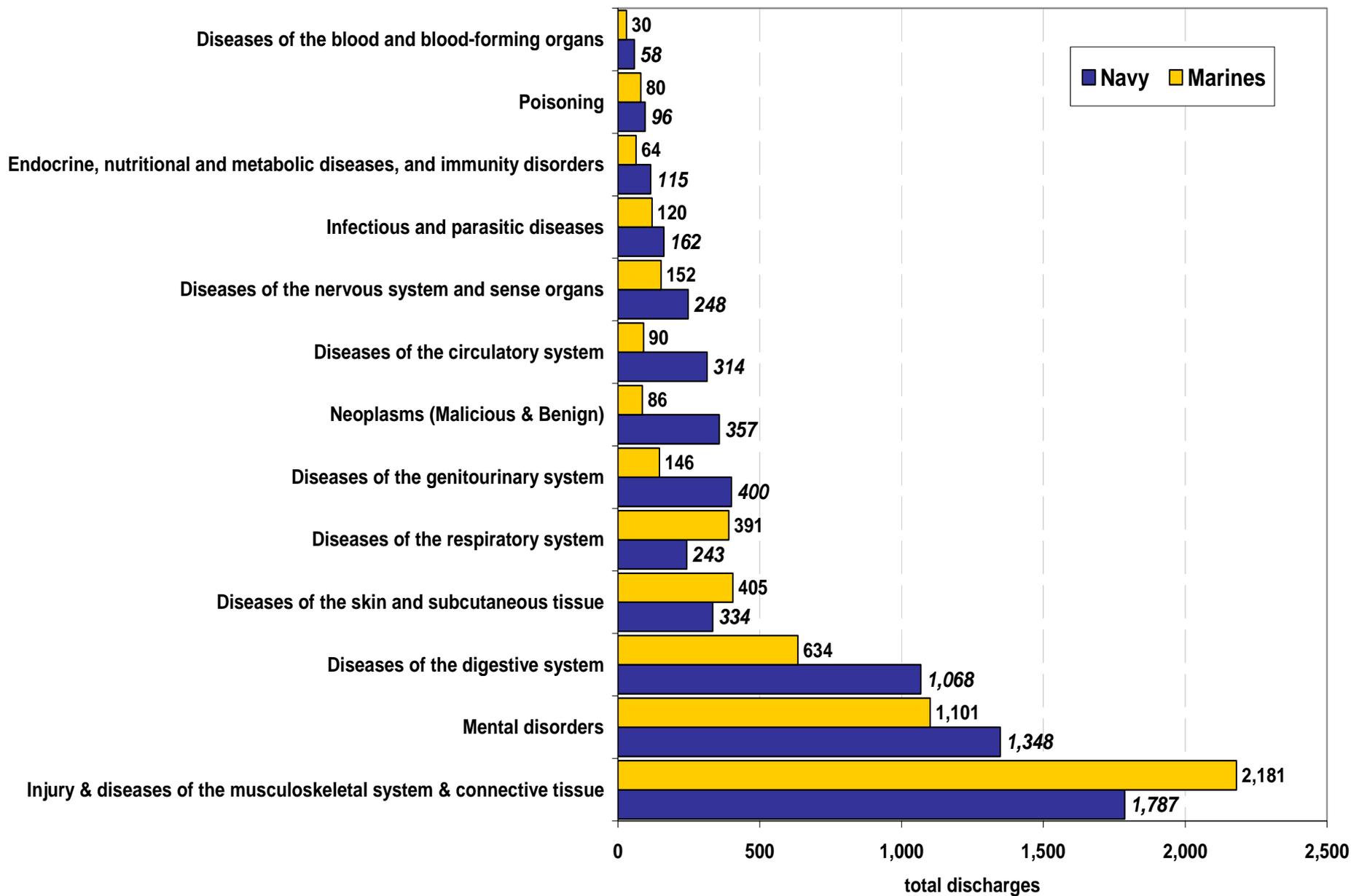


Injuries from Physical Training Affect Readiness

Physical training and sports injuries are of particular concern. Based on the likelihood of success in decreasing injuries having the greatest impact on military readiness, the Defense Safety Oversight Council (DSOC) recommends that the greatest reduction of lost duty days due to injuries across DoD may be achieved via mitigation efforts focused specifically on **sports-and physical training related injuries.**

*DSOC, DoD Military Injury Prevention Priorities Working Group:
Leading Injuries, Causes,
and Mitigation Recommendations, Feb.2006.*

**Number of Hospital Discharges (Inpatient, MTF), SIDR 2007
Major Disease and Injury Categories*, Active Duty - Navy & Marine Corps**



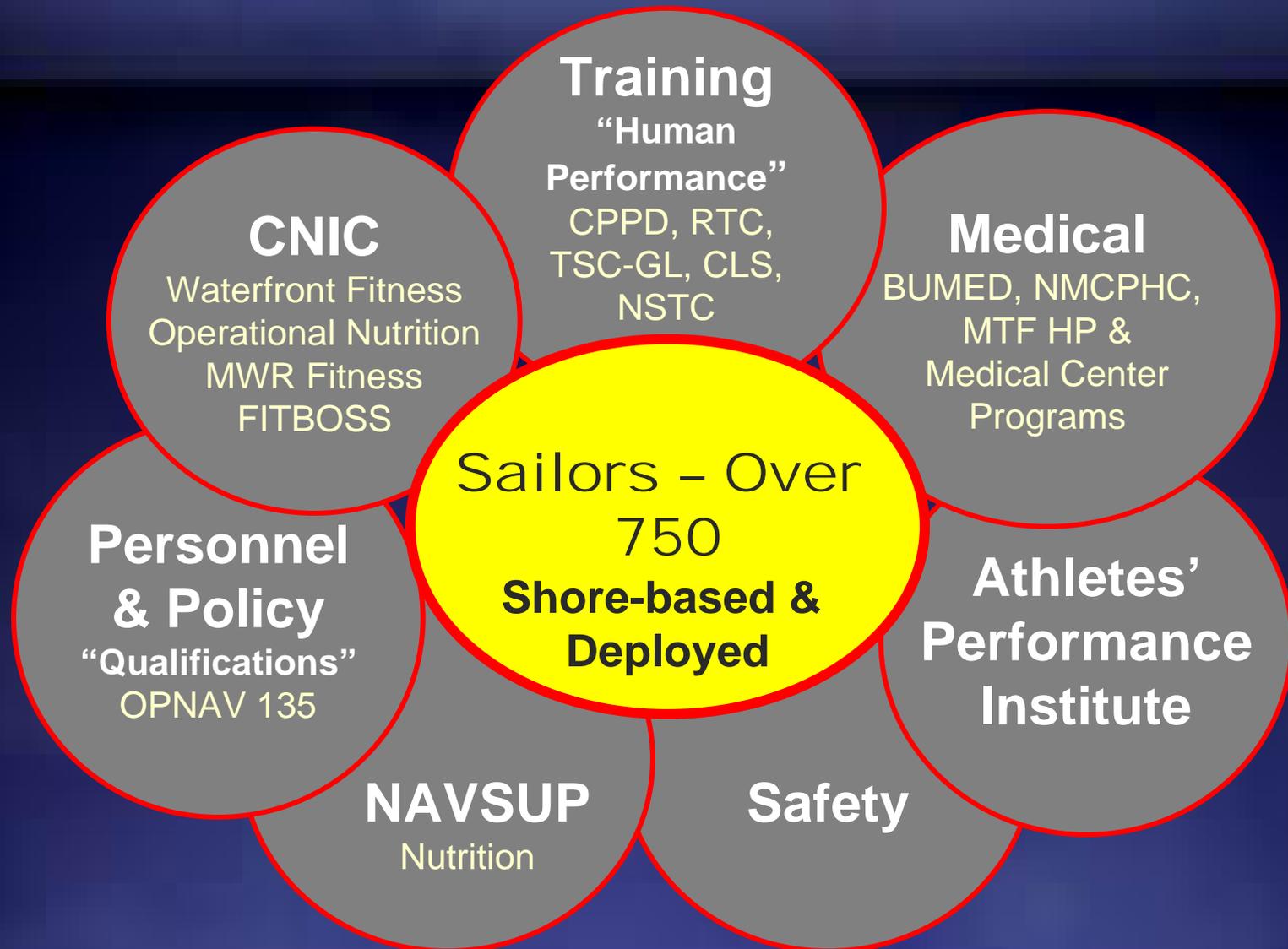


API Partnership

- Athletes Performance Institute (API)
 - = Professional Sports Model
 - = Human Performance & Injury Prevention
 - = **winning record**
- Trains over 1000 professional athletes.
- Trained last 4 NFL #1 draft picks.
- Affiliated with The Andrews Institute – Dr. James Andrews (Ortho for Redskins)
- Working with Navy - over 7 years.



Project Fitness & Nutrition Experts





Human Performance Advisors - TYCOM

Culinary Specialist

Command Fitness Leader

Health Promotion Coordinator

Physical Therapist – large deck

FITBOSS

Fleet Waterfront Fitness

Independent Duty Corpsmen

Leading Chief Petty Officer - Medical

Focus Groups:

- E-3 – E – 6
- E-7 – E-9
- Officer
- FEP

Chief of the Boat
CMDCM

Executive Officer
Commanding Officer

FORCMS – TYCOM
FLTCMS, MCPON

Naval Health Research Center

<http://www.nhrc.navy.mil>

- Efficacy Review - SMART Center
- Military training injuries
- Blisters & injuries
- Gender differences in injury rates
- Foot structure and range of motion on injuries
- Epidemiology of injury among females
- Use of physical activity to predict stress fx.
- Epidemiological pattern of injuries and physical training



Naval Health Research Center

Both military and civilian research identifies that high running volume significantly increases the risk for lower extremity injury.

During initial military training about 25 percent of men and about 50 percent of women incur one or more physical training-related injuries.

About 80 percent of these injuries are in the lower extremities and are of the overuse type—a condition brought about by physical training volume overload (generally excessive running).



CNIC “MWR”

Command Fitness Leader Training

CNIC = CFL Training / 2796 CFL & 5000 ACFL

Navy Fitness Standards Revision

Emphasizes educated outreach personnel to assist CFL's with safe & effective group PT.

Provides nutrition & injury prevention guidance.

Mission Nutrition: Train the Trainer

Program provided to Navy fitness & N9 (CS) staff



CNIC “MWR” SHAPE – Over 40

- Launched September 2008
- Designed for over 40 age. Targets active duty - fitness, nutrition, injury prevention = improved unit readiness.
- Trained SHAPE Experts: NSCA, ACE, ACSM, Cooper Inst.
- Pilot Locations:
 - Washington Navy Yard
 - NAVSTA San Diego
 - Joint Forces Staff College
 - NAVSTA Pearl Harbor



CNIC “MWR Fitness” Civilian Fleet Programs SAFE, TRAINED, AND READY TO FIGHT!

Fit-Boss on Large Decks

- Exercise science, ATC, CSCS, Kinesiology, etc.
- Air Craft Carriers / Amphibs.

Fleet Waterfront Fitness

Norfolk, San Diego, Mayport



Navy Fleet Physical Therapy Program

- Billets: Large Decks
- Serve as operational platform's Physical Therapist
- Serve as health promotion program manager. (OPNAVINST 6100.2A)
- Provide training directly related to ms injury prevention
 - Back Injury Prevention
 - Ergonomics – lifting /carrying
 - Safe Exercise Programming
 - Tobacco Cessation

NIMITZ – TC success rate 6% to 43%



- Provide ms injury clinical education: corpsmen training
- Develop/provide patient education --- provider handouts

Intrinsic Risks & Injuries

Primary factor identified is smoking.

Smoking reduces the oxygen-carrying capacity of blood. Thus, red blood cells are prevented from picking up enough oxygen to meet the demands of the body's tissues. (up to 70% reduction in bone/wound healing process.)

Research among male infantry soldiers who were smokers had a **3 times greater risk of injury.**



OPNAV 135: Physical Readiness Division Individual Augmentee Injury Prev.

PT/CSCS Site Visit
FT. Jackson, SC

September 2007 On-Site Review

How can we physically prepare
Navy personnel to effectively
transition into IA training and
immediate deployment?

NOTE: OPNAV 6110.1H Revise – MAB involvement?



Navy Safety Center Prevention Policy & Surveillance

OPNAVINST 1500.75A: Risk mitigation in high risk training.

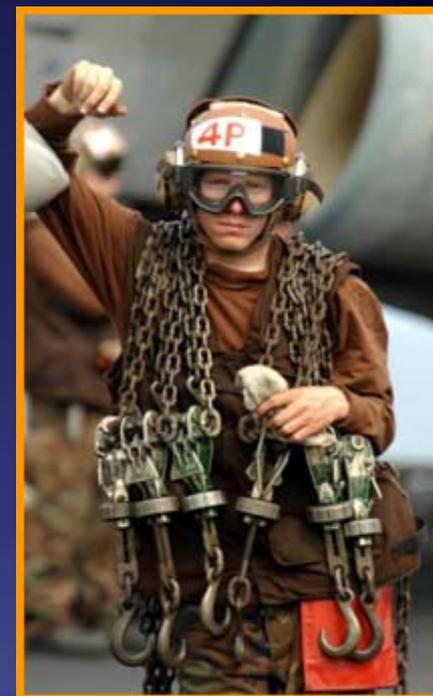
OPNAVINST 3500.39B

OPNAVINST 6110.1H: Physical Readiness

OPNAVINST 5100.23: Ergonomic Program

ORM & Safety Policy, Guidance,
and Communication

..... Always a phone call away



Navy Safety Center/September 2006:

If you're not ready for PT, then you're not ready for the physical readiness test (PRT), either.

Having a fitness plan that limits preparation to only the 2 weeks before each PRT can kill you. The Navy has lost 19 Sailors to medical emergencies that developed during the physical fitness assessments (PFA's) in the past 5 years (2001 – 2006).

Another 17 nonfatal medical emergencies have occurred during the same period.



AED – Potential to be placed into OPNAV 6110.1H

SMART Centers & Musculoskeletal Centers

- Close proximity to Sailor/Marine. Pearl Harbor = 15 yds.
- Accurate and Timely Diagnosis.
- Aggressive Reconditioning & Education.
- Accelerated Return to Duty.



NMCP Musculoskeletal Centers

Implementation Date:

2002

Locations:

- Naval Station Norfolk McCormick Gym – Feet from the pier

- NAS Oceana The “Hornet’s Nest” PRT Center

NMC Portsmouth
Orthopedic Program

BRAVO ZULU

Sports medicine clinics keep athletes on their feet

It's called the break-away slam dunk. Everyone has, at one time or another witnessed this basketball technique. The person with the ball sees an open lane — clear all the way down the court. He makes a mad dash for the other end of the court and jumps to complete a slam dunk into the basket. Then the television cameras zoom in on the basketball player after he finishes the shot. He grabs his lower leg and falls to the floor in immense pain.

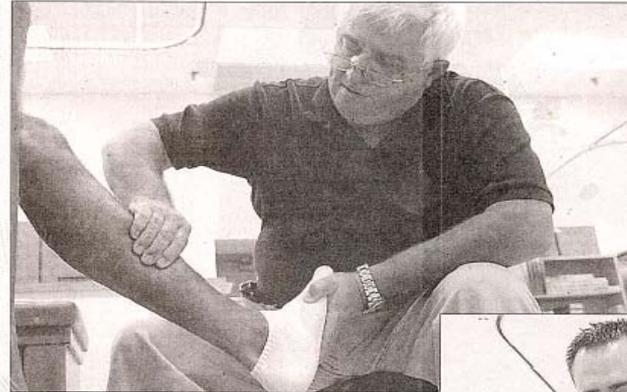
“The most common injury we see at the clinic is a stretched muscle of the lower leg, which attaches to the Achilles tendon,” said Dr. Robert Randolph, a contract orthopedic doctor at Naval Medical Center Portsmouth’s

“Sports medicine is more than just bones and muscles.”

Dr. Robert Randolph,
Orthopedic doctor at Naval
Medical Center Portsmouth’s
Oceana Fleet Sports and
Chiropractic Medicine Clinic

Oceana Fleet Sports and Chiropractic Medicine Clinic. “This type of injury is most common among those who play any kind of jumping sport where you have to push off with one foot or the other.”

There are two sports clinics in the area, which handle many different types of orthopedic injuries, and deal with hand, foot, ankle, bone and joint and spine-related injuries. One is at Naval Air Station Oceana in the old gym, and the other is the Wellness Center located just inside gate 5 in the McCormick



Dr. Robert Randolph, a contract orthopedic doctor at Naval Medical Center Portsmouth’s Oceana Fleet Sports and Chiropractic Medicine Clinic, checks Marine Corps Pfc. Andrew Hinkebein’s Achilles tendon before taking X-rays. The Ocean clinic is one of two in the area. The other is inside the Wellness Center located just inside gate 5 in the McCormick Gym at Naval Station Norfolk.

Gym at Naval Station Norfolk. The clinics sports medicine team consists of physicians trained in orthopedics, sports and primary care medicine specialists, chiropractors, physical therapists and certified athletic trainers.

The purpose of the sports medicine clinics is to treat sports-activity or work-related injuries to help active duty service members quickly return to their daily routine.

“Sports medicine is more than just bones and muscles,” said Randolph. “We are unique in that all our staff are trained in the outpatient treatment of orthopedic as well as medical aspects of sports medicine, with an emphasis on preventive medicine.”

“We do more than sports medicine,” said Jason Hupp, athletic trainer Oceana clinic. “We do a wide array of all orthopedic injuries, but we are not a trauma center.”

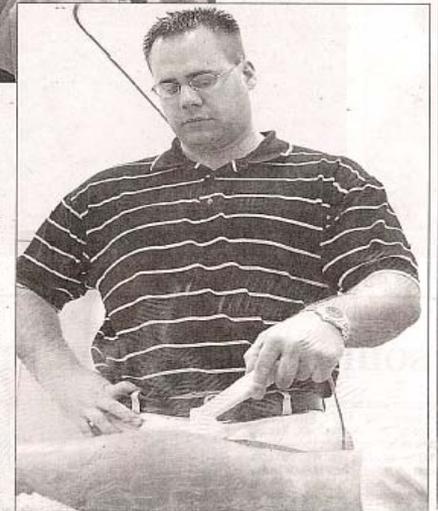
The clinic in Oceana and the one in Norfolk are part of NMCP’s plan to provide sailors with quick access to sports and work related orthopedic medicine right at the deck plates said Cmdr. Danette Svobodny, associate service line leader, bone and joint sports medicine.

“Most outside consults will take about three weeks to fill,” said Svobodny, “so the patients can be seen more quickly by making an appointment at one of these two clinics.”

There are three different ways to obtain an appointment

to one of the clinics — service members can go through their primary care provider for a consult, they can call the Hampton Roads Appointment Center or they can call the individual clinics directly. The Oceana clinic, which is located on D Avenue in building 529, provides care to patients with appointments as well as walk-in patients, and the Naval Station Norfolk clinic assists walk-in patients only.

Jason Hupp, an athletic trainer at Oceana Fleet Sports and Chiropractic Medicine Clinic, performs a type of ultrasound on a patient. This particular ultrasound sends heat waves deep into the leg muscle to try and sooth the pain.



BUMED 2003: Standardization of MS Continuum of Care

Define SMART Center

Define SMART Mission

Define Personnel Criteria

Identify role:

- SMART – USN/BUMED
- SMIP – USMC/TECOM

Initiate SMART Efficacy Review/NHRC



SMART Proven Impact

- MCRD, SAN DIEGO, 1990-1994
 - **50% reduction** in Medical Rehab Platoon (MRP) Population
- MCRD, PARRIS ISLAND, 1998-2000
 - **49% reduction** in medical attrition over 2 YEARS
- TBS QUANTICO, 1999 - 2001
 - **22% reduction** in lost training days
- PEARL HARBOR, 2002
 - **11% reduction** in LIMDU's, and **28% reduction** in physical evaluation boards (PEBs)

Naval Special Warfare “Best Practice” Model

Assessment of Military Physical Performance and Injury Risk

Naval Special Warfare Development Group

8-week Comparison of Two Physical Training Programs (Cross Fit v/s SPEARED)

Old Dominion University



Assessment of Body Armour on Functional Performance

Office of Naval Research



Modeling & Validation of an Orthotic Knee Brace system for Use on High Speed Boats

ODU Multidisciplinary Seed Funding



Motion Induced Fatigue on High-Speed Boats

Computer Sciences Corporation; Carderock Division Combatant Craft Dept (CCD)



Program Evaluation – NSW Group 2

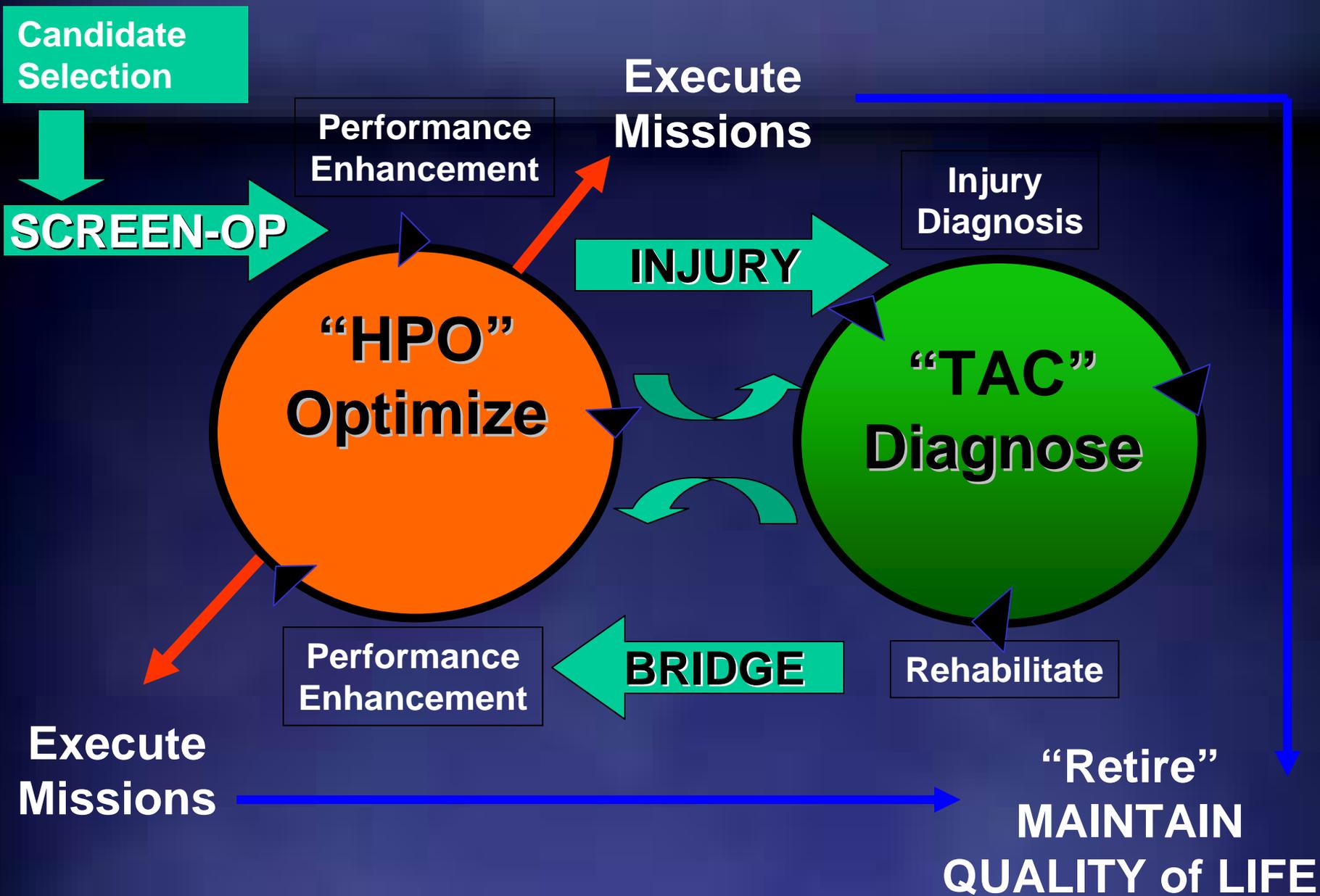
University of Pittsburgh

NSW Advisory Capacity: Old Dominion University; University of Connecticut;
University of North Carolina; University of Delaware; University of Kentucky

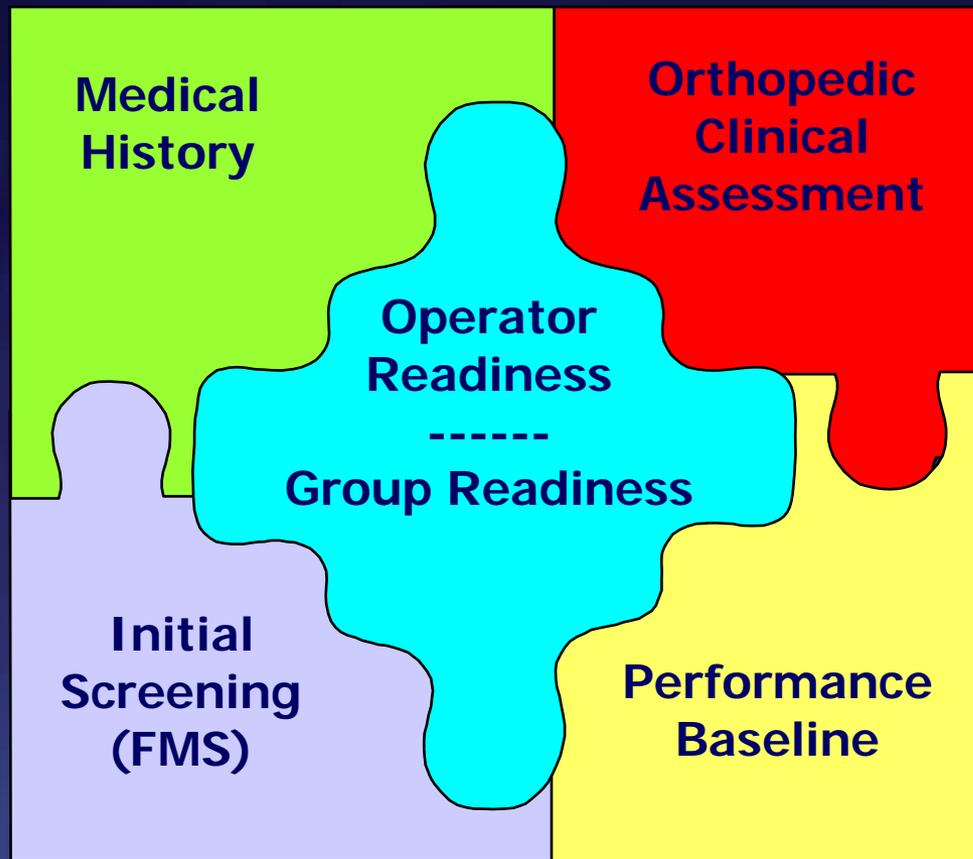
Naval Special Warfare Tactical Athlete Model



NSW Physical Readiness Model



Risk Assessment Components



PREVENTION

Screening and Evaluation

- Identify at risk operators
- Establish Baselines
- Identify “weak links”
- Clinical/Performance
- Prescribe Corrective Strategies
- Risk Factor Classification



PREVENTION: Screening and Evaluation

Clinical Evaluation

- Medical Hx Review
- Orthopedic Assessment
- Functional Movement Screen
- Star Excursion Test
- Body Composition
- Grip Strength
- Postural Assessment



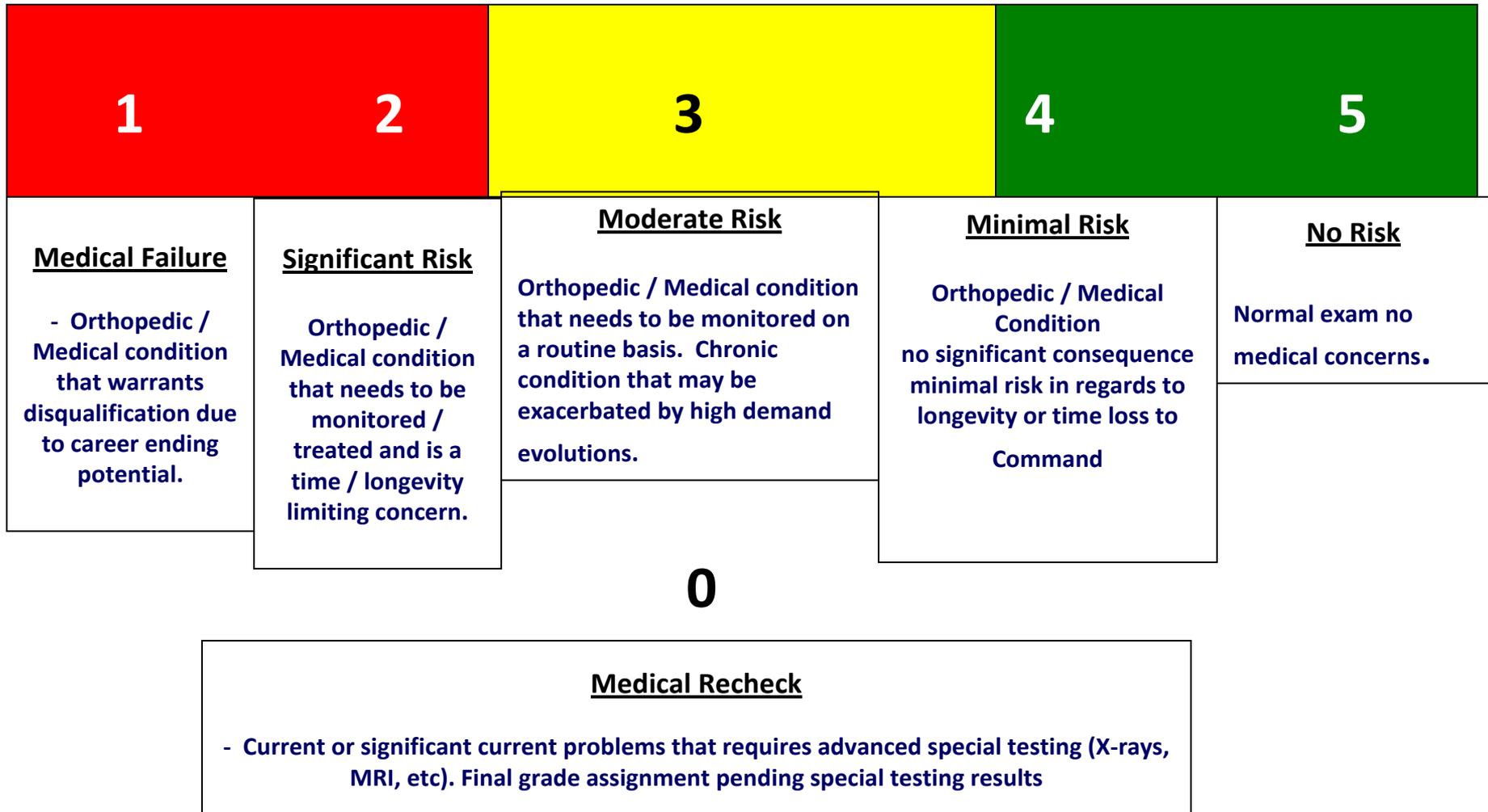
PREVENTION: Screening & Evaluation

Performance Measurements

- Strength Assessment
- VO2 Max
- Agility
- Vertical Jump
- Anaerobic Threshold
- Rope Pull
- Swim/Ladder Climb



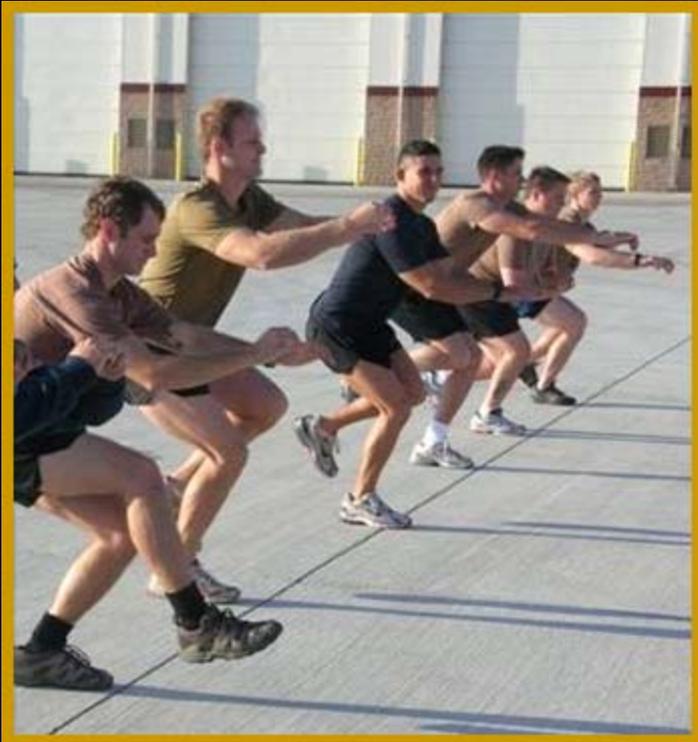
Risk Factor Continuum



Specificity of Training - Resiliency



Functional Movement for Performance & IP



Functional Movement for Performance & IP



“A bad program done well is better than a good program done poorly”

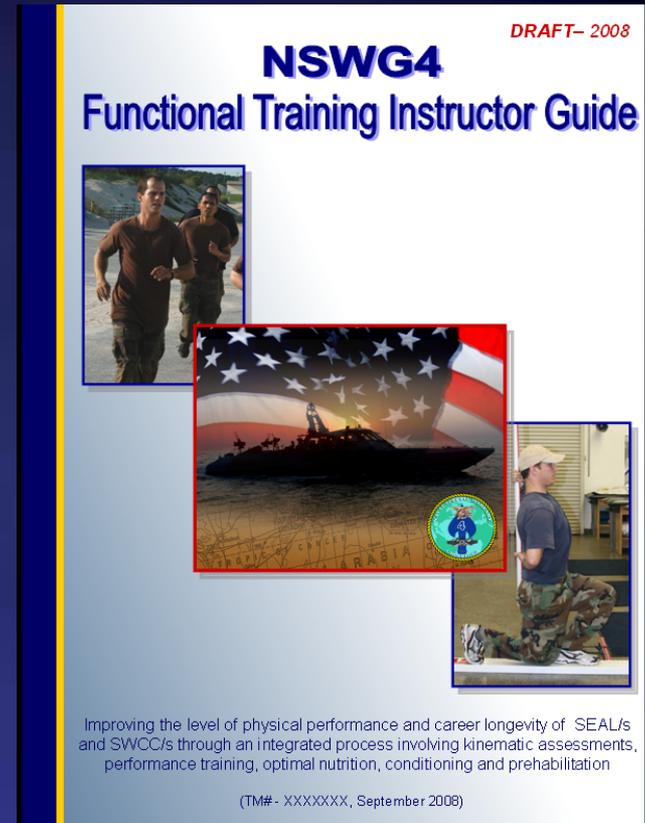
Functional Training Instructor (NSWG-4)

Complete 3 phased Education Process

- 1) National Accredited Certification
- 2) Specialized Training
- 3) In-House Education

Upon Completion of JQR FTI will receive
Letter of Designation from CO

- Liaison between Training and HP
- Daily Coaching and Instruction
- Assist in Program Design
- Education of DET Coaches
- Motivator





Diana Settles Strock, MAT, ATC

Navy & Marine Corps Public Health Center
Program Manager, Injury Prevention & Physical Fitness
Diana.strock@med.navy.mil

Center for Personal & Professional Development
Senior Advisor, Health & Fitness
Diana.strock@navy.mil

