Navy Injury Prevention
Current Practices & Initiatives

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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.

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.
(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
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
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.

<table>
<thead>
<tr>
<th>Disease Category</th>
<th>Navy</th>
<th>Marines</th>
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<tbody>
<tr>
<td>Injury &amp; diseases of the musculoskeletal system &amp; connective tissue</td>
<td>1,787</td>
<td>2,181</td>
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<td>Mental disorders</td>
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<tr>
<td>Neoplasms (Malicious &amp; Benign)</td>
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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

Sailors – Over 750
Shore-based & Deployed

Training
“Human Performance”
CPPD, RTC, TSC-GL, CLS, NSTC

Medical
BUMED, NMCPHC, MTF HP & Medical Center Programs

Personnel & Policy
“Qualifications” OPNAV 135

CNIC
Waterfront Fitness
Operational Nutrition
MWR Fitness
FITBOSS

NAVSUP
Nutrition

Safety

Athletes’ Performance Institute

FITBOSS
Operational Nutrition
MWR Fitness

OPNAV 135
Human Performance Advisors - TYCOM

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

Culinary Specialist
Command Fitness Leader
Health Promotion Coordinator
Physical Therapist – large deck
FITBOSS
Fleet Waterfront Fitness
Independent Duty Corpsmen
Leading Chief Petty Officer - Medical
• 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
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
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.
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.
Sports medicine clinics keep athletes on their feet

Dr. Robert Readings, a contract orthopedic doctor at Naval Medical Center Portsmouth's Ocean Fleet Sports and Chiropractic Medicine Clinic, checks Navy Corpsman Andrew Mulcahy's ankle before taking X-rays. The clinic and gym can be found on Base. The other is in the Wellness Center located just inside gate 5 in the McCormick Gym at Naval Station Norfolk.

"We do more than sports medicine," said Readings. "We are unique in that our staff are trained in the comprehensive treatment of athletic as well as medical aspects of sports medicine, with an emphasis on preventive medicine."

Sports medicine clinics offer services such as physical therapy, sports medicine, preventive medicine, and the treatment of athletic injuries. They are staffed by certified athletic trainers and orthopedic surgeons, who work together to provide the best care for athletes.

"Most athletic injuries are not caused by a single event," said Readings. "They usually result from repeated stress to the body."
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
NSW Physical Readiness Model

Candidate Selection

Performance Enhancement

 Execute Missions

“HPO” Optimize

“TAC” Diagnose

Injury Diagnosis

Rehabilitate

BRIDGE

“Retire” MAINTAIN QUALITY of LIFE

Performance Enhancement

SCREEN-OP
Risk Assessment Components

- Operator Readiness
- Group Readiness
- Initial Screening (FMS)
- Performance Baseline
- Medical History
- Orthopedic Clinical Assessment
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
<table>
<thead>
<tr>
<th>Risk Factor Continuum</th>
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<tbody>
<tr>
<td><strong>Medical Failure</strong></td>
</tr>
<tr>
<td>Orthopedic/Medical condition that warrants disqualification due to career ending potential.</td>
</tr>
<tr>
<td><strong>Significant Risk</strong></td>
</tr>
<tr>
<td>Orthopedic/Medical condition that needs to be monitored/treated and is a time/longevity limiting concern.</td>
</tr>
<tr>
<td><strong>Moderate Risk</strong></td>
</tr>
<tr>
<td>Orthopedic/Medical condition that needs to be monitored on a routine basis. Chronic condition that may be exacerbated by high demand evolutions.</td>
</tr>
<tr>
<td><strong>Minimal Risk</strong></td>
</tr>
<tr>
<td>Orthopedic/Medical Condition no significant consequence minimal risk in regards to longevity or time loss to Command</td>
</tr>
<tr>
<td><strong>No Risk</strong></td>
</tr>
<tr>
<td>Normal exam no medical concerns.</td>
</tr>
<tr>
<td><strong>Medical Recheck</strong></td>
</tr>
<tr>
<td>Current or significant current problems that requires advanced special testing (X-rays, MRI, etc). Final grade assignment pending special testing results</td>
</tr>
</tbody>
</table>
Specificity of Training - Resiliency
Functional Movement for Performance & IP
“A bad program done well is better than a good program done poorly”
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
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