



Total Fitness for the 21st Century

Conference Report
Institute for Alternative Futures
December 30, 2009



HUMAN PERFORMANCE RESOURCE CENTER





CHAMP is a Uniformed Services University (USU) and joint service effort that focuses on the health and performance of the Warfighter. We are a joint medical and health resource for the Department of Defense for education, basic and clinical research, and a clinical expertise in the area of military unique human performance optimization. Visit us at www.champ.usuhs.mil for more information.



Samueli Institute, a 501(c)(3) non-profit scientific research organization, investigates healing processes and their application in promoting health and wellness, preventing illness and treating disease. The Institute is one of an elite group of premier organizations in the nation with a track record in complementary and integrative medicine, healing relationships and military medical research. For more information, visit us at www.samueliinstitute.org.



The Institute for Alternative Futures (IAF) is a nonprofit research and educational organization founded in 1977 by Clement Bezold, Alvin Toffler and James Dator. IAF helps organizations monitor trends, explore future possibilities and create the futures they prefer. IAF draws on a robust selection of futures methodologies, such as environmental scans, forecasts, scenarios, visioning and its own "aspirational futures" technique. Past clients include the World Health Organization, the Department of Health and Human Services, the Environmental Protection Agency, as well as a wide range of corporate clients through its for-profit subsidiary, Alternative Futures Associates (AFA). For more information, write to futurist@altfutures.com or call us at (703) 684-5880.

TABLE OF CONTENTS

CONFERENCE BACKGROUND	1
INTRODUCTION	1
DEFINITION OF TOTAL FITNESS	2
FITNESS DOMAINS	3
Physical Fitness.....	3
Psychological Fitness.....	5
Behavioral Fitness.....	8
Medical Fitness	9
Environmental Fitness	11
Nutritional Fitness.....	12
Spiritual Fitness	13
Social Fitness	15
GAPS AND BARRIERS	19
RECOMMENDATIONS	21
CONCLUSION.....	23
Appendix A: Participant List	24

CONFERENCE BACKGROUND

Responding to the creation of a wide variety of programs to address the fitness of U.S. military personnel, Chairman of the Joint Chiefs of Staff ADM Mike Mullen tasked the Uniformed Services University (USU) Consortium for Health and Military Performance (CHAMP) to define “Total Fitness” and to identify metrics that can be used to measure it. CHAMP engaged the Samueli Institute to organize a conference that would bring together military and civilian experts from a variety of fields, as well as personnel from the line, to develop a definition and the associated metrics. The Samueli Institute engaged the Institute for Alternative Futures (IAF) to design and help facilitate the conference, *Total Fitness for the 21st Century*, which was held at the USU on December 6-9, 2009. This report summarizes the conference findings.

INTRODUCTION

What you carry into war is not all on your back. It is in your mind, your spirit, and in your family. The challenges of our current wars are tremendous and on-going. We are going to have to attend to the capability gaps – to build both our internal and external capacities. Even the tough are affected. You can’t put armor around the psyche or the heart. You have to build its resilience. That requires a total approach to the whole person and community.

With these words, Dr. Wayne Jonas of the Samueli Institute charged participants at the Total Fitness in the 21st Century conference at the Uniformed Services University of the Health Sciences (USU) to define “Total Fitness” and to identify the metrics that would help unit commanders as well as individuals set the right conditions to promote fitness.

Several themes emerged throughout the discussion during the four days of the conference. First, it was readily apparent that Total Fitness extends beyond the warrior. As Chairman of the Joint Chiefs of Staff ADM Mike Mullen told participants, “The impacts of the wars have been on families and this is a fundamental readiness issue.” The health of military members’ families plays an integral role in the force’s ability to accomplish its mission and must be incorporated into any definition of Total Fitness.

Second, the metrics of Total Fitness should measure positive as well as negative outcomes. Just as health is much more than absence of disease, Total Fitness extends beyond the mere absence of physical, mental, or spiritual injury to include factors such as physical well being, diet, spirituality, friendships, acclimation to environment, etc. – all factors that promote optimal performance and resilience before, during, and after deployment. Measures should show movement toward Total Fitness rather than just a reduction in the many problems exposed by today’s wars.

Third, the Total Fitness of the force is inextricably linked to the Total Fitness of the society from which they are drawn and to which they will return. In an era when only 17% of American young people meet the fitness standards to join the military, U.S. national security depends on the ability of the U.S. armed forces to “lead from the front” on the issue of Total Fitness – for the force, their families, and society. As CPT Dennis “D.J.” Skelton told participants, “When we go



back to hometown America, we can strengthen the communities from what we have learned in the military.” ADM Mullen reiterated this point, saying, “Part of Total Fitness is readiness to move out into society and be a wonderful citizen.”

Fourth, the conference emphasized the importance of leadership in achieving Total Fitness. As ADM Mullen told participants, “Leaders have to find paths for people to move on.” Total Fitness represents a vital path, marked by opportunity as well as challenge for military leaders. The path begins with the definition of Total Fitness along with initial tools to measure progress toward this fitness. Military leaders will have to commit to stay on this path to reach the improvements needed throughout the military and the country.

DEFINITION OF TOTAL FITNESS

The conference defined Total Fitness as:

A state in which the individual, family and organization can sustain optimal well-being and performance under all conditions.

Total Fitness is manifest by three characteristics: health, resilience and optimal performance.

a) Health is defined as:

A state of complete physical, mental, social, and spiritual well-being and not merely the absence of disease or infirmity.

b) Resilience is defined as:

The resources to withstand, recover and/or grow in the face of stressors and changing demands.

c) Human Performance Optimization (HPO) is defined as:

The process of applying knowledge, skills and emerging technologies to improve and preserve the capabilities of military members, families and organizations to execute essential tasks.

The domains of Total Fitness are **physical fitness, psychological fitness, behavioral fitness, medical fitness, environmental fitness, nutritional fitness, spiritual fitness, and social fitness**. The conference produced the following graphic (**Fig. 1**) to communicate this expanded definition, with an incomplete list of illustrative components listed inside the octagon for each domain.

In thinking about these domains we have asked three questions. First, how should the domain be defined and what are the key components? Second, what metrics would tell us whether or not we are improving the fitness of the force in each of these domains? Third, given the military’s immediate needs, what suitable metrics are already available and could be leveraged over the short-term. The following sections address these three questions for each domain.

Fig. 1 – The Eight Domains of Total Fitness

A total of 70 individuals, from all services and areas of expertise were divided into eight working groups. These groups met during the three days of the conference to work on defining, describing the components and identifying the current metrics available for measuring and tracking total fitness in the individual, family, community and organization. The following is a summary of what those working groups produced.



FITNESS DOMAINS

Physical Fitness

Definition:

Physical fitness is:

The ability to physically accomplish all aspects of the mission while remaining healthy and uninjured.

The components of physical fitness are:

- Strength and Power. Strength is the ability to create force and power is the ability to generate force quickly over distance.
- Endurance is the body’s ability to accomplish a task over and over again.
- Mobility is the ability to move the body in space with the precision and speed necessary to negotiate an obstacle
- Flexibility is the capacity of a muscle or joint to achieve optimal range of motion

Metrics:

Current available metrics include fitness tests, injuries, and profile data. Most fitness tests primarily evaluate strength and endurance. However, most military tasks require mobility, especially in the Army and Marine Corps, yet the only service to test mobility is the Marine

Corps. Unfortunately, most service members train solely for the events on the fitness test due to scores being linked to promotions. Current physical training primarily consists of distance running, push ups, pull ups, and sit ups. When the test does not complement the physical tasks required by the mission, service members are training ineffectively for mission accomplishment. A physical fitness test that does not evaluate and simulate the physical demands of the mission degrades not just fitness assessment but the entire physical training program. Fitness tests should reflect required mission tasks so service members will train for the mission. Currently in the Army, APFT scores are reported as an average across the unit. It would be better to report a unit percent pass rate based upon the number of Soldiers who passed the APFT/Total number of Soldiers available to take the APFT.

Suggested testing metrics would include a fitness test that reflects mission tasks and would incentivize service members to train correctly for mission oriented physical fitness. All fitness tests should include mobility. The current generic Service fitness test could be continued once a year and a second more mission oriented test could be given during the second half of the year, similar to the Marine Corps. A possible list of events that would include three components is listed below. The test could be given as individual events or combined to form a test similar to the Marine's Combat Fitness Test.

- 1) Illinois Agility Test tests agility by having the subject run through a pattern of cones.
- 2) Medicine Ball Push tests explosive power by having the subject push a medicine ball forward from a seated position while measuring the distance thrown.
- 3) Broad Jump tests lower body mobility and strength by measuring the farthest jump.
- 4) Pull Ups/Flexed Arm Hang test upper body endurance.
- 5) Front Squat Repetitions test strength and endurance and have been shown to predict road march performance and box lifting performance.
- 6) Functional Movement Screen has shown to identify NFL players who are prone to injuries. It is currently being tested in the military, and if valid and reliable in this population, it should be used. Those scoring low on this screen could be given additional training/therapy.

Currently, data collected on profile incidence is very haphazard and maintained at unit level only. What is collected and whether or not it is collected at all depends on the unit. Unit deployability is collected through MEDPROS. Unfortunately this is rarely accurate until right before deployment. The true number of non-deployable Soldiers is not known until temporary profiles are added (usually just before deployment). It would be ideal to have a unit percent

profile rate (number of Soldiers on profile over total number of Soldiers). Commanders could track trends and look for potential causes if specific mechanisms of injury were tracked as well. Create a standard DoD wide injury surveillance system supported by the chain of command. Currently, it is impossible to get accurate injury data. Injury data must be specially requested and is limited to what is captured by AHLTA. Not all providers use AHLTA, especially those at aid stations and not all providers use standardized coding correctly. A standard injury surveillance system would allow injury trends to be identified and corrected early. This surveillance system should include at a minimum:

- i. Mechanism of Injury
- ii. Body Part Injured
- iii. Deployable Go/No Go

Psychological Fitness

Definition

Psychological fitness is:

The integration and optimization of mental, emotional, and behavioral abilities along with capacities to enhance performance and resilience.

The components of psychological fitness are:

- **Mental** – the way people think and process information (e.g. flexibility, attention control, self-efficacy, self-confidence, mastery, engagement, cognitive agility),
- **Emotional** – the way people feel about themselves, others and their environment (e.g. composure, optimism, sense of humor, hope, love, perseverance, self-regulation), and
- **Behavioral** – the way people act in response to their thoughts and emotions (e.g. coping, positive emotions, mastery, behavioral regulation, altruism, knowledge, humor, mental processes and agility).

Outcomes and benefits of psychological fitness include:

- Knowledge
- Connectedness and engagement
- Self-regulation and composure
- Coping
- Positive emotions and humor
- Mental processes and agility

- Mastery
- Confidence

Metrics

The evidence base for metrics of psychological fitness is limited and variable. The relevant fitness factors are organized under general headings of mental, emotional, and behavior, but many key components span two or more of these headings. The following metrics address psychological fitness:

Outcome category	Outcome Variable	Sample metrics
Performance	Individual job performance	Annual performance appraisals, OJT records, rates of people completing PME/GME
Performance	Individual task performance	Scores on written and practical tests, 360 surveys, customer feedback, Cognitive adaptability scale, combat cuing
Performance and Resilience	Exercise and sleep	Actigraph, Epworth sleepiness scale
Performance	Team/organizational job performance	Organizations inspections (e.g., compliance), unit surveys (e.g., climate),
Performance	Team task performance	Evaluation of team coordination and maneuvering in simulated performance scenarios
Performance and Resilience	Unit cohesion and morale	Cohesion assessments (e.g., MHAT), Behavioral needs assessments, DRRI, ask WRAIR about measures
Performance	Ethical decision making	Ethical beliefs and behaviors (e.g., MHAT), AF culture survey
Performance and Resilience	Team/organizational safety mishap rates	Civilian lost day rate, PMV fatality rate, motorcycle fatalities, Four wheel PMV fatalities, class 'A' mishap rates, safety center data
Performance and Resilience	Organizational Citizenship behavior	CFC participation rates, Status of Forces survey, rates of humanitarian medals granted

Resilience	Individual and aggregate health and functioning	Metrics from health promotion programs, RTD rates for MH patients, PDHA, PDHRA, waivers and profiles, non-battlefield injuries, Shirom-Melamed Burnout measure, CES-D, PTSD Checklist-Military version, health care utilization rates, Fordyce Happiness Scale, non-battlefield injury rates, waivers, profiles, diagnoses
Resilience	Unit/enterprise health	Rates of participation in health promotion programs
Resilience	Enhanced recovery – individual and aggregate	% of SM who do not have PTSD/depression/suicide
Unit Resilience	Unit antecedents to protective and risky behaviors	Unit risk inventory (URI)
Resilience	Individual risk behaviors	Alcohol related incidents, indiscipline rates
Resilience	Retention	Early separations, decision to re-enlist, status of the forces survey
Resilience	Family functioning	Family support surveys, family maltreatment rates, divorce rates
Individual, unit and family well-being	Well-being	Work life well-being scale

The following recommendations are for thinking about metrics of psychological fitness:

1. In choosing metrics, it is important to differentiate between ultimate outcomes and intermediate outcomes. Ultimate outcomes are the impact on performance and function. Intermediate outcomes are the changes in psychological fitness domains (e.g., coping) that will lead to ultimate outcomes (indicators of improved performance and resilience).
2. Consider the use of a survey tool for assessing Total Fitness, perhaps similar to the Global Assessment Tool used by the Comprehensive Soldier Fitness program. Whenever possible, leverage pre-existing data sources and use innovative approaches to take advantage of easily available data rather than adding another survey.

3. The military needs a comprehensive approach to assessing outcomes and protective/risk factors. One suggestion would be to revise the PHA to evaluate Total Fitness; it could become a Total Fitness Assessment (TFA).

4. Focus on integrating databases, as in the Millennium and CHPPM approaches to integrating data from personnel, PDHRA, and operational databases. This is especially important to avoid potentially misleading interpretations when looking at single metrics that could be informed by other related metrics.

Behavioral Fitness

Definition

Behavioral fitness is:

The relationship between one's behavior and their positive and negative outcomes.

The components of the behavioral domain are:

- **Substance abuse**
 - Tobacco
 - Alcohol
 - Prescription and OTC meds misuse; illicit drug use
- **Risk mitigation**
 - Seat belts
 - Helmet use
 - Driving/road rage
 - Cell phone use texting/talking
 - Recreational activities and sports safety
 - Hearing conservation
 - Safety glasses
- **Hygiene – field and personal**
 - Field hygiene
 - Hand washing
 - Cough etiquette
 - Sexual hygiene – e.g., condom use
 - Sleep hygiene – e.g., 7-9 hours, sleep required for peak performance

The outcomes and benefits of behavioral fitness include improved performance as well as the reduction of healthcare costs and lost duty time due to injury or infection.

Metrics



Metrics for risk mitigation could include percentage seatbelt use and helmet use over the last month, or percentage use of hearing and sight protection. Other metrics could measure the outcomes of poor behavior, such as percentage accidents, MS injury, Emergency Room reports, and sick call attendance related to accidents.

Metrics for substance abuse could include the rates of non tobacco use, rates of non binge drinking, and other measures of responsible or irresponsible use of substances. Data sources for these metrics could include Reduce, SHRB, risk reduction data, RHA, PDHA/PDHRAs, safety data, and command surveys.

Metrics for hygiene could include rates of communicable diseases, which could be drawn from hospital data. This group also discussed the importance of sexual behavior as a subset of risky behavior, which could also be measured through rates of sexually transmitted diseases. Many conference participants pointed to the linkages between relationships and sexual behavior and such outcomes as depression and suicide, particularly in the case of young warriors.

In the domain of behavioral fitness, participants saw leadership as particularly important to improved fitness. Many pointed to the prominence of drinking in military culture – as in social outings for military members and in the “make-up drinking” that some members do after returning from deployment – and suggested that the military culture itself would have to change significantly if these risky behaviors are to be reduced. Leaders can guide their troops by modeling responsible drinking.

The challenge in this domain is to find metrics that measure the positive fitness the military would like to encourage. For example, the group suggested counting the number of non-smokers, the number who are not drinking, or who are not binge drinking. Such benchmarks would be helpful to a commander in assessing the behavioral fitness of his unit.

Medical Fitness

Definition

Medical fitness is:

A condition of mental and physical well-being as determined by medical metrics, that establishes prerequisites for individual mission accomplishment and worldwide deployability.

There are two components of Medical Fitness:

- **Medical Readiness**
- **Physiological Readiness**

The outcome of having a medically fit force is a low likelihood of non-combat/DNBI medical evacuation.

Metrics

The existing metrics for medical fitness include DNA, dental, anthrax and immunizations, hearing, vision readiness, Periodic Health Assessments (PHA), and others as tracked by service-specific information management systems. These metrics could be improved by creating one standard for all services. This is becoming particularly important to commanders of joint commands, who currently need to use a variety of different systems to assess the health of their personnel, even when the data and metrics do exist. Such a system, if accessible by medics and by the line, would allow all services and component commanders (COCOMs) to easily add and track medical indicators and to identify real-time changes in individual and collective high-risk behaviors that can require interventions.

The minimum standard in such a system would be a Department of Defense definition of Fully Medical Ready (FMR). This metric would ensure a high likelihood of maintaining a state of health that will allow mission accomplishment and worldwide deployability, and a low likelihood of being medically evacuated for DNBI. The group identified the following, but not exclusive, list of the components of being Fully Medical Ready: immunizations, HIV, DNA testing, PHA, dental, medical non-deployable conditions (including pregnancy), and Pro Mask inserts.

Metrics such as the AUDIT C for alcohol screening, rates of Alcohol Related Incidents (e.g., DUI/DWI, assaults, sexual assaults), and rates of tobacco use (captured in PHAs and AHLTA) would capture the contributions of some behaviors to medical fitness. In the case of tobacco use, these contributions include higher morbidity and mortality from H1N1, decreased cardiovascular fitness, slower wound healing, and reduced night vision. A Body-Mass Index (BMI) would also provide a metric for medical fitness at the individual and aggregate levels.

Women's health could be measured through routine PAP screening as per USPSTF (to include Chlamydia), routine MMG screenings as per USPSTF, clinical breast exam, clinical bimanual pelvic exam, contraceptive counseling, unplanned/unintended pregnancy counseling, STI counseling, and compliance with post-partum pregnancy PT guidance.

Sleep is also an important aspect of medical fitness, as it provides improved cognitive performance, improved judgment, reduced accidents, reduced obesity, inflammation, and cardiovascular disease, improved resilience, and more rapid recovery from Traumatic Brain Injury (TBI), behavioral health problems, and injury and illness. Sleep could be measured through self-reporting, or through the addition of a sleep instrument such as PSQI or the Epworth Scale to the PHA, PDHA, and PDHRA.

Physiologic readiness, which the group also discussed as a component of medical fitness, could be measured by the completion of adaptive training within an appropriate period of time prior to

mission execution. Another relevant metric would be the completion and implementation of pharmacologic measures designed to mitigate physiologic risk associated with the operational requirements. Other physiologic indicators could be identified for cardiovascular risk, pre-diabetic risk, environmental intolerance risk, and behavioral health risk.

Environmental Fitness

Definition

Environmental fitness is:

The ability of our warriors to perform their duties well in any environment, and, withstand the multiple stressors of deployment and war.

There are three adaptations that can be considered under environmental fitness. They are **acclimatization** to a particular temperature, altitude, etc., **acquired tolerance** that builds up while the person is exposed to a certain environmental stress, and **cross-tolerance** – that is, when adaptation can be induced without prior exposure to the environmental stress of concern.

Metrics

The environments in which wars are fought – most frequently outside – are central to the consideration of fitness for combat. To combat the environmental stresses that occur during wars, we have two sets of tools: biomedical and mission-related. Biomedical methods include nutrition, acclimation, and hydration, whereas mission-related methods include the clothing and equipment our soldiers wear and use.

As defined above, three adaptations that occur when a warrior is deployed to an adverse environment: acclimation, acquired tolerance, and cross-tolerance. Existing metrics of acclimation include functional outcomes and exposure dosage, both of which can be measured in a general sense. However, there are no metrics for acquired tolerance and cross-tolerance. Potential future metrics of acclimation could include dosage monitors and status algorithms that could calculate a warrior's risk level automatically. Metrics of acquired tolerance may benefit from biomarkers in the “-omics” fields – e.g., genomics, proteomics – that would track with the level of tolerance a warrior has acquired for a given environmental stress.

One metric that would significantly contribute to evaluating environmental fitness is having each Warfighter acknowledge their individual limits. In the highly competitive culture of the military, those who want to get promoted may downplay symptoms and put themselves and others at greater risk. A measurement of environmental fitness would have to address this in order to capture accurate data that could be useful to individuals and to the force.

Nutritional Fitness

Definition

Nutritional fitness is:

Appropriate nutrient intake to fuel immediate bioenergetic needs, support adaptation and healing processes, and protect against disease.

The components of nutritional fitness are:

- **Dietary quality**
 - Nutrition composition of foods – e.g., dietary standard of adequate micro- and macro-nutrients
 - Food preparation impact
 - Soldier/consumer acceptability – e.g., presentation and variety
 - Minimize barriers to successful fueling, such as time requirements
 - Appropriate for the operational environment – e.g., can you consume it in a moving vehicle?
- **Specific nutritional requirements** – Daily fluid and energy requirements depend on an individual warrior’s body mass, the amount of work performed, load-bearing requirements, distance traveled and the environment in which the work is performed.
- **Healthy choices for fueling** – Healthy food (fuel) choices reflect individual dietary practices, personal nutrition knowledge, and the effectiveness of educational materials and/or programs that are designed to sustain and protect the warfighter.

Metrics

Research has already demonstrated what type of diet is required for nutritional fitness. The challenge in this domain is changing behavior and culture. This behavioral change could come through two means – top-down requirements for better eating to support improved well-being and performance, or individual decisions to maintain a healthy diet. Both of these approaches raise challenges – first, there are limits to what you can mandate and prohibit, even for a military population, and second, it is difficult for individuals to maintain a healthy diet in an environment dominated by unhealthy options. Thus, the optimal metrics are those that quantify the availability of healthy options (some of which already exist and are discussed below) and those that measure the commander’s effectiveness in changing individual behavior.

Some tools already exist for monitoring the components of nutritional fitness at the unit level, such as the CHOW and DINE surveys used in the Navy and Air Force, respectively. One simple metric would be whether or not a unit or facility is utilizing these tools. This would confirm for

commanders that the opportunity for nutritional fitness is available and that the eating environment promotes personal and social well-being.

Another metric for commanders would be the capability of food services to meet the specific energy and nutritional requirements of unit activities. For example, the H.E.A.L.T.H. website offers computer algorithms for determining requirements and a list of “best practices,” as well as a checklist of what needs to be addressed for nutritional readiness. Evaluating compliance with these “best practices” would provide commanders with an assessment of the unit’s access to mission-specific nutrition. Individuals could also apply these “best practices” to improve their own performance.

Another metric that could be implemented relatively quickly is a brief questionnaire taken by the individual that would help the commander assess the eating behavior of the unit. This could also be incorporated into a DoD enterprise-level survey of military health behavior that includes nutritional questions. This would provide a gross assessment of the force’s nutritional readiness and help identify problems that should be addressed to improve performance and reduce DoD healthcare costs.

Spiritual Fitness

Definition

Spiritual fitness is:

The development of positive and helpful beliefs, practices and connecting expressions of the human spirit.

“Human spirit” refers to the essential core of the individual, the deepest part of the self, and includes the essential capacities for autonomy, self-awareness, and creativity, as well as the ability to love and be loved and to appreciate beauty and language.

The components of spirituality are:

- **Cognitive beliefs and thoughts** – e.g. forgiveness, mercy, and thankfulness
- **Behavioral actions and practices** – e.g. prayer and meditation, worship, study of inspirational writings, charity, altruism, and service
- **Relational connection to others and to the transcendent – e.g. secular and religious community, divinity, humanity, self, service, branch, and unit**

Metrics

Although the terms “spirituality,” “religiosity,” and “spiritual fitness” can provoke long and often heated arguments among any population, there is strong evidence that spiritual fitness, as defined above, plays a key role in Total Fitness. As ADM Mullen told the conference



participants, the chaplains know more about how the force is doing than anybody else. Capturing spirituality's contribution to Total Fitness is essential to optimizing the well-being and performance of warriors.

The first of two areas where spiritual fitness is vital is moral injury and trauma, where spiritual practices can play a key role in recovery. Some relevant metrics include:

- EEQ subscales and sense of coherence questionnaire – the EEQ has been validated, but not in the military
- A burnout assessment such as the Shirom-Melamed Burnout Measure
- The military version PTSD checklist
- Professional QoL
- Dimensions of Self Concept Form W (DOSC-W) job stress subscale.
- Connor-Davidson Resiliency Scale – this has been evaluated in the military and proven to be useful.
- PSS for perceived stress
- The PDHA or PDHRA could also be useful here.

These metrics could measure practices that have the potential not only to bring members back to the baseline but to bring them to peak performance, with benefits for productivity and performance, effective coping, retention, general health status, and individual and unit fitness.

The second area where spiritual fitness is particularly important is preparedness for severe disability or death. This seems to be a key indicator of spiritual fitness, but is not routinely addressed during pre-deployment preparations. One possible means for filling this gap is the Deployment Risk and Resiliency Inventory (DRRI) Section C (“Training and Deployment Preparation”), which contains a Sense of Preparedness Scale that is designed to assess the extent to which an individual perceives that he or she was adequately prepared for deployment. Although the DRRI has not yet been validated as a clinical instrument, it may prove useful as a pre-deployment assessment for preparedness for severe disability and death.

Beyond these two areas, spiritually- and ethically-driven engagement is more generally important to overall health, unit cohesion, leadership, and the modeling of a spiritual lifestyle. To approach spirituality more generally, an appropriate metric may be the Spiritual Attitudes Inventory (SAI). This inventory provides for an inner personal support and evaluation list, including an assessment of the degree of isolation.

A variety of measures could capture the negative outcomes that could have been mitigated by greater spiritual fitness, such as suicides, separations due to misconduct, absenteeism, etc. However, with these metrics it is difficult to isolate the effect of spirituality. Positive indicators with the same limitation include metrics of unit cohesion, job satisfaction, productivity, “presenteeism,” and volunteerism and service behaviors.

Social Fitness

Definition

Social fitness is:

The existence of healthy social networks in the unit, family, and society that support optimal performance and well-being.

There are two identified components of social fitness for the military:

Task cohesion – the shared commitment among members to achieving a goal that requires the collective efforts of the group – e.g., clearly stated goals, sense of purpose, reaffirmation, feedback and synchronization

Social cohesion – the nature and quality of the emotional bonds of friendship, liking, caring, and closeness among group members – e.g., morale, interpersonal attraction, social interactions, community connectivity

Metrics

Some existing metrics would be modified to capture selected aspects of social fitness. A Group Environment Questionnaire (GEQ) could be incorporated as a metric of task cohesion and social cohesion. The questionnaire consists of 18 items with 4 subscales: individual attraction to the group (task), individual attraction to the group (social), and group integration (one for task and one for social). This questionnaire has been used and validated.

Many of the existing surveys to assess social fitness were developed for self-improvement, and may not be immediately convertible into metrics for use by unit commanders. For example, the Global Assessment Tool used by the Comprehensive Soldier Fitness (CSF) program has a social component, but the purpose of this program is the self-improvement of the individual member and no information is passed on to unit commanders. Similarly, BUMED has developed a “stress thermometer” that members, their spouses, and their children can use to assess their own stress levels and to initiate conversations on stress and stress management. Conversely, Command Climate Surveys are conducted to evaluate a unit commander, and thus have their own political aspects that may reduce their value for measuring social fitness.

Much of the military’s research on social fitness has focused on task cohesion and social cohesion of units. While these concepts are important – particularly from the standpoint of improving team performance – they are battlefield-based and do not extend through time. Social fitness is important for the entire deployment cycle, not just for the battle. For example, some participants highlighted the difficulties faced by Individual Augmentees (IAs) who attach for a period of time to a combat unit of another service. A Navy person may have difficulty

integrating themselves into a group of Army Warfighters. Other participants discussed the rapidity with which an individual soldier may find himself pulled away from his unit and pushed back into society without the benefit of integrating and sustaining the social relationships forged in combat.

Families and Communities

Measuring social fitness outside the areas of task cohesion and social cohesion is difficult, but first the Integration Team and then ADM Mullen made clear that families must be included in Total Fitness. Both families and communities will need to be recognized components of social fitness with metrics that address their well-being. This provides a challenge to military thought leaders. If it is important to measure what we want, for example, why are measures of divorce, domestic violence, and criminality the way to assess social fitness in the military community? Are there measures that envision the desired end-state – e.g., what would a socially fit unit or community look like?

One metric might be the success of military families. Family success could be measured by the extent to which the next generation is thriving along the dimensions of Total Fitness. For example, one metric might be the percentage of children from military families who meet the fitness requirements to join the military when they come of age. At present, that measure stands at 17% for society as a whole. Do children of military families lead or lag society as a whole?

Other potential themes to explore when developing metrics of social fitness are listed below:

Several participants evoked the concept of “self-actualization.” If military members are self-actualizing – in particular through their social relationships – then how would we measure that?

Some participants proposed other metrics of social fitness, such as how many gazebos a commander has put in an area (for soldiers to congregate), how many picnics or barbecues they have spontaneously, and how effectively soldiers are brought together through sport.

- Measures of social fitness must also evaluate the effectiveness of the leadership – e.g., whom you trust in the organization, to whom do you go for leadership and counsel. Network analysis could be done to assess these dimensions.

Are there ways to measure the positive “symptoms” of good social fitness – e.g., the support felt by an individual member during pre-deployment, deployment, and post-deployment?

What militaries, countries, organizations, etc. are doing well when it comes to social fitness? Are there tools or metrics that they are using that could be adapted to the U.S. military?

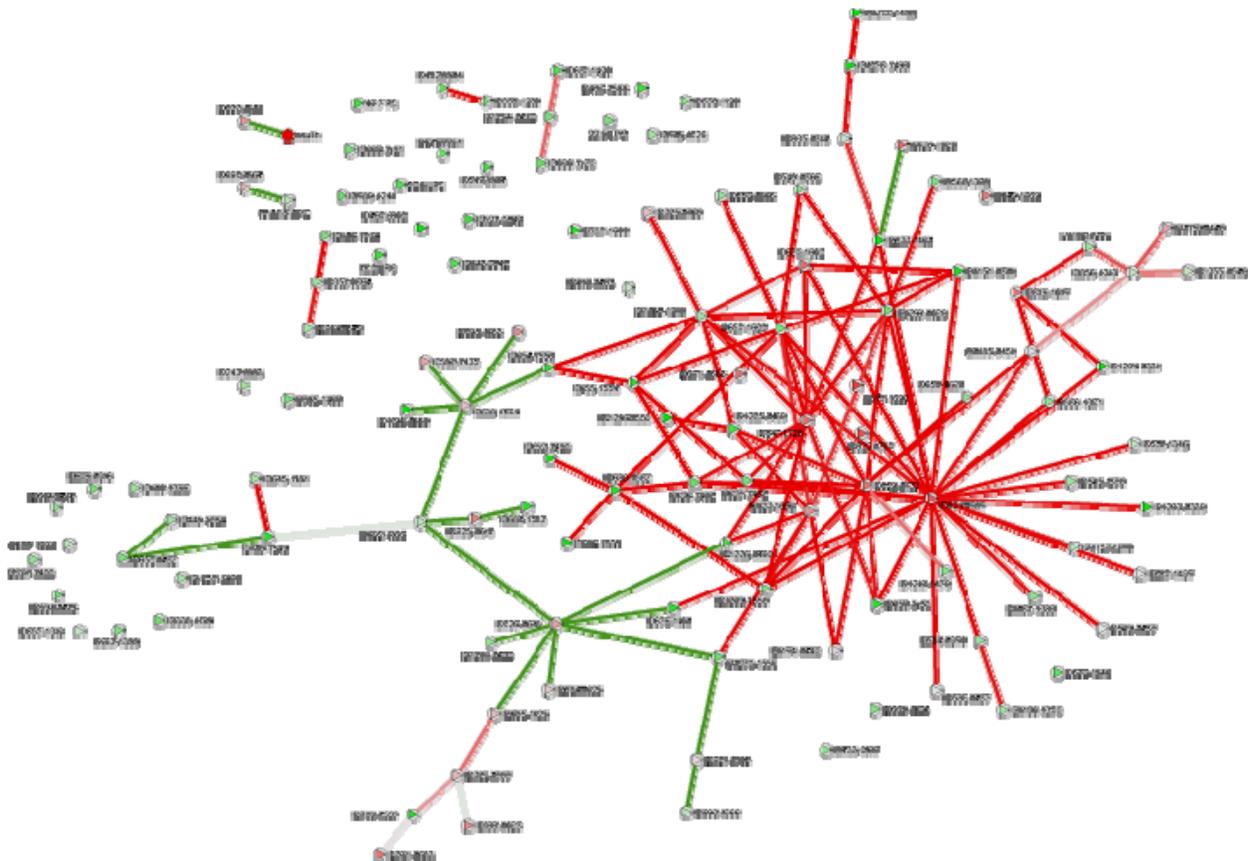
Although these initial metrics may describe some aspects of social fitness, metrics that provide hard data for unit commanders are not available. More work must be done to define what a socially fit unit, base, community, service, or society might look like before adequate measures can be developed.

Conversations that took place during the conference may help describe what a healthy community looks like, and how social fitness could be measured. Sociologists such as Pierre Bourdieu, James Coleman, and others use the term “social capital” to describe the networks and relationships within a society or community that can be applied toward particular objectives. Although social capital does not explicitly refer to such objectives as resilience, health, or performance, it does constitute a “bank account” from which individuals and groups may draw as required – e.g., to assist in recovery from injury or trauma. Social capital represents a potential component for the development of social fitness.

But how could social capital be measured? If social capital refers to the capacity of a community to build networks and relationships, perhaps it is best measured by the density of interactions, or the “social flux density,” within that community. One would also want to consider the diversity of interactions – that is, do people interact across barriers of race, gender, generation, etc.? As with “network mapping” within organizations to identify how different relationships yield influence or support, a measurement of social flux density could indicate the health of the community. Jane Jacobs illustrates this in her highly influential work *The Death and Life of Great American Cities*, where the number of people looking out on to the street was used as an indicator of a neighborhood’s health and safety.

Technology may offer a method for measuring social flux density through the use of radiofrequency IDs, or RFIDs, which are already used in many forms of identification. With a suitable sensor system in place, this technology could measure the rate at which members of a community interact with one another and identify the healthy and unhealthy pathways along which members travel.

In opening of the conference, Dr. Wayne Jonas of the Samueli Institute used the following graphic to show complexity of the healthy molecular pathways within a living organism (**Figure 2**). Imagine this graphic depicting a military installation rather than an individual, with the red and green lines representing pathways people move on base. The pathways may be identified as supporting fitness domains, such as the roads connecting the barracks to the chaplain’s office, or the dining facility to the athletic fields. Unhealthy pathways might be identified, such as the roads between the barracks and the liquor store, or between fast-food outlets and the athletic fields. An RFID-based sensor system could, even without identifying specific individuals, provide base commanders an indicator of the social flux density and the overall fitness across all eight domains of his base and its personnel. It would also generate ideas for strengthening the healthy pathways (e.g., co-locating clinics, nutritionists, gymnasiums, chaplains, and other services in a “Total Fitness Mall,” a concept that appealed to many participants) and weakening unhealthy pathways (e.g., closing fast-food outlets or moving the liquor store away to a distant base location). Although this is just an example of a particular measurement approach, it can help include community as a component of social fitness, and connect community and family to Total Fitness.



¹Figure 2 – Network in Fat from Animal Model of T2DM

¹ Jonas, W. (2009). *Getting to total fitness* [PowerPoint Slides]. Retrieved from: <http://www.usuhs.mil/mem/chdefiningtotalfitness.html>.

¹ Jonas, W. (2009). *Getting to total fitness* [PowerPoint Slides]. Retrieved from: <http://www.usuhs.mil/mem/chdefiningtotalfitness.html>.

GAPS AND BARRIERS

The gaps between the military's performance in each domain and the optimal level for Total Fitness and the barriers which might impede improvement in each domain are relatively consistent. The means to address the gaps and barriers are summarized below.

There need to be conceptual frameworks with logic models is needed to provide unity of effort while respecting service-specific culture. Operational definitions, a common lexicon, and common metrics of fitness will be required.. Integration between services and within services (e.g., those focused on suicide prevention, substance abuse prevention, health promotion) will be essential to reduce redundancy and leverage complementary efforts. Issues unique to the Guard and Reserve also deserve full attention.

The CJCSI can provide a list of enterprise-wide general competencies and guidelines for services to develop their own service-, unit-, mission-, and specialty-specific competencies.

There is a limited ability to measure full-range external and internal resources and their role in performance, health promotion and prevention outcomes. Some participants recommended scanning emerging public health and economic burden analysis models to improve the military's social modeling capabilities in order to evaluate return on investment.

One key barrier cited by several groups was the culture change required around the new paradigm of Total Fitness. This culture change will demand leadership understanding and promotion of Total Fitness, resource allocation for Total Fitness, and line leadership support in the form of strategic communications, since the group believed Total Fitness will be much less successful if it is seen as a medical program. These strategic communications should emphasize the value of Total Fitness for the individual service member and for the line commands, and should counteract any potential misconceptions about the costs of a Total Fitness approach.

The military also needs to create incentives to adapt Total Fitness lifestyles, philosophies, and practices. Organizationally an award to recognize exceptionally "totally fit" commands could be created, and accountability measures through all levels of the chain of command could be instituted. The medical system would consider MEPRS codes and business plans as valid activities for providers. Individuals would have set aside time during the duty day for activities related to Total Fitness. Other incentives may need to be created for families and teams.

The healthcare delivery philosophy and practices must also migrate from a focus on illness and disease ("illness response system) to a focus on wellness and Total Fitness. This suggests a change in metrics (e.g., RVUs) and changes in education and training. Also, unit commanders need to be educated on what they should do when given information regarding the needs of their units in these fitness domains.

Within the specific domains, groups cited the need for better assessments and metrics. Examples include a baseline sleep assessment, new ways to measure environmental adaptations to and the development of wearable sensors to track health-related indicators and activities.

Several groups also cited that for leadership must serve a large role in promoting Total Fitness. For example, one significant barrier to nutritional fitness across DoD is the unconstrained availability of unhealthy choices and dining facilities. Furthermore, because nutritional knowledge is generally low and dining facilities operate under contract rather than under DoD leadership, this unconstrained availability translates into poor nutritional choices by the service member.

The need for leadership is also seen in the domain of spiritual fitness. Leaders are often silent on spiritual issues because of the diversity of beliefs. No formal process exists for caregiver collaboration in areas of training and intervention, where spiritual fitness could make the largest contribution. Also, these formal processes may be hindered by a lack of appreciation for plurality and diversity, particularly among younger personnel – junior chaplains included.

RECOMMENDATIONS

Individual recommendations based on their previous work or based on learning during the conference speak to the caliber and commitment of the experts who participated in this conference, as shown below:

- Set a goal for developing a Total Fitness Assessment (TFA) of individual and family fitness that provides feedback or a plan for the service member, their family and contributes to a dashboard that gives the unit commander an accurate picture of his unit's Total Fitness. Specifically:
 - Within 12 months, replace PHA, PPHA, and PDHRA.
 - Within 24 months, develop a individual and leader's dashboard – a total fitness index.
 - Within 36 months, develop an integrated structure for delivering individual, family and unit fitness plans.
- Establish a Total Fitness Program and Outcome Evaluation Center or process that can evaluate fitness programs across the DoD, and provide rapid feedback to commanders on their safety, effectiveness and comparative value.
- Develop a fully integrated a model of psychological strengths in which the unique strengths of each person can be recognized and developed, including the barrel-chested athletes who take the hill and the thick-glassed geeks who drive UAVS and track budgets.
- Recognize the linkages between the different domains. For example, rather than placing sleep in one box, recognize that it belongs in several domains and should be approached on that basis. Total Fitness must be multi-disciplinary and reach across silos.
- Create a Total Fitness Command that is a Joint command. This Total Fitness Command would keep resources and initiatives current and would ensure that best practices are disseminated out to the field. In the interim, someone will need to drive the effort forward. OSD/NA could be considered for this role.
- Create a Total Fitness “Mall” – e.g., co-located existing agencies to support each other. These could include gymnasium, nutritionist, chaplain, CMH, social worked, childcare center, etc.
- Ensure that Total Fitness focuses on performance and readiness, not just health. To do this, it needs to be a command, not medical, responsibility.
- Develop a tool that measures Total Fitness in a way that is useful to all levels of command – not just for O-6 and above or the medical community. Provide a tool to help

an E-6 understand and make informed decisions about the readiness and fitness of his platoon.

- To succeed, Total Fitness will require buy-in and commitment from the top leadership, as well as a willingness to drive the culture changes that will be required. Commanders will need a push from the top to implement it.
- Prior to deployment, mandate that members and their families attend a facilitated discussion of the real possibility of death, dismemberment, mental illness, and moral injury and trauma. This discussion could be facilitated by a chaplain or similar professional and could include veterans and their family members who have experienced these things.
- Conduct an annual CJCS evaluation of instruction that collectively measures the Total Fitness of the community in aggregate.
- Market! Market! Market! Employ Madison Ave PR/Marketing effort to get buy-in from junior leaders, young soldiers, family members (e.g., the ones who never show up at unit events), reserve, and guard.
- Keep it simple, measurable, feasible. Use the latest information technology to assist in this effort.
- See what our international partners are doing.
- Consider how to provide better group fitness options that target the whole family and provide better education opportunities. It would be a good idea to make “deployed spouses” fitness groups. Fort Drum has a wonderful childcare program (free) at the gym so spouses can better take care of themselves.
- Total Fitness should be transformed into a leadership-driven, fully resourced “lifestyle management program” for the most critical components of our military, service members and their families.
- Do not worry about being politically correct or doing what you think the majority of people will accept. Create a program that is spiritually enlightened and right. Include spirit in the true sense of the word. This program must consider the spouse and family.
- One of the new concepts utilized in corporate environments is that of behavior and wellness coaching. Many corporate executives and managers are using coaches to set goals and develop themselves in areas of physical, emotional and spiritual fitness to achieve balance, reduce stress, and build life skills. The concept may have a place in the military. A coach could serve as a mentor and/or facilitator in integrating wellness and a focal point for these areas of well-being.

CONCLUSION

I've seen young soldiers self-actualizing because they grew up in abusive families but are now learning how to set boundaries.

With these words, USUHS Senior Enlisted Member HMCM Clinton Garrett grounded Total Fitness in the experience of the young soldier, sailor, airman, or marine who is entering a new phase of development. But these words may also hint at a larger vision for Total Fitness – that by setting the boundaries of Total Fitness and its domains, the military family has through this effort taken an important step in becoming what it wants to be. The four themes that emerged during the conference chart a path toward this vision, which can be seen by taking one of the domains – nutritional fitness—as an example of what the military can do. This domain is where the military could most quickly demonstrate its commitment to a new framework of Total Fitness. The required knowledge already exists; all that is required is a culture change.

The first theme is the importance of the family for Total Fitness. In the nutritional domain, we can envision healthy families where children eat nutritious foods that develop their cognitive, emotional, spiritual, and social abilities in order to better support their service member – and perhaps to one day serve their country.

The second theme is to measure the positive, not just the negative. While we can certainly measure obesity in children, we can also count the young Americans who *do* meet the physical requirements to join the military, and this eligibility is linked to values of patriotism and service that resonate throughout society.

The third theme is that the Total Fitness of the military is inextricably linked to the Total Fitness of the society they serve. Perhaps no other domain drives home this point as well as nutritional fitness. Unless the U.S. addresses its problems with obesity and poor nutrition, the military will likely continue to face difficulties in recruitment and training. When military members “move out into society and become...wonderful citizen[s]” by showing that nutritional fitness makes for a better life, then the leadership of the services will continue long past today’s wars.

This fourth theme of leadership can be demonstrated convincingly through nutritional fitness. Even as commanders decry the poor shape of their troops, the opportunity is ripe to provide the knowledge and discipline required for military members and communities to make better dietary decisions. As in the other domains, leadership is required to drive the culture change for nutritional fitness.

Total Fitness for the 21st Century marks a first step for the future. The metrics can measure progress and with a clear vision of Total Fitness better metrics can be developed and refined over time. The path charted in the conference for Total Fitness can lead to greater performance, well-being, and security for our military and our country.

Appendix A: Participant List

Organized by group participation in the working groups sessions:

Behavioral Fitness	LCDR Richard Schobitz, USN Dr. Elmer Wayne Combs Dr. Robert Bray Dr. Edward J. Zambraski Col Jose Rodriguez-Vazquez, USAF LTC Dan "Trey" Mosley, USA COL Jeffrey E. Short, USA
Integration Group	Dr. Stephen Frost BG Colleen McGuire, USA Dr. Caron Shake Dr. Wayne Jonas COL Francis G. O'Connor, USA BG Michael Rounds, USA COL Christian R. Macedonia, USA Dianna Purvis Dr. Patricia Deuster
Medical Fitness	CAPT Kurt A. Henry, USN CAPT Richard J. Westphal, USN COL Ray Watters, USA COL Karen K. O'Brien, USA COL James G. Jolissaint , USA LTC Shawn F. Kane , USA BG Stephen N. Xenakis, USA (Ret.) COL Beverly Land, USA
Nutritional Fitness	CAPT Mark Stephens, USN LTC Sandra Keelin, USA Dr. Roy M. Vigneulle COL Stephen Craig, USA Dr. Scott Montain Dr. Steven H. Bullock COL Robert Saum, USA



Physical Fitness

Col Brian Reamy, USAF
Deborah Jolissaint
MAJ Vancil B. McNulty, USA
CPT Tanja Roy, USA
Dr. Stefan H. Constable
COL Barbara Springer, USA
LtCol Joseph Shusko, USMC (Ret)
Dr. Michael Sawka
Jean Anderson
Nancy Saum

Psychological Fitness

COL Stephen Bowles, USA
Dr. Jennifer Piver-Renna
MAJ Todd Yosick, USA
Dr. Mark Bates
Terri Tanielian
CDR Meena Vythilingam, USPHS
LTC Greg Burbelo, USA
LTC Edward Brusher, USA
CAPT Edward Simmer, USN
Lt Col William "Chuck" Isler, USAF
Dr. Glenn R. Schiraldi
Dr. David T. Fautua

Social Fitness

COL Nicole Keesee, USA
LTC Blain Walker, USA
Dr. Jon Hammermeister
Tyson Thomson
Dr. Kimberly Firth
CPT Paul Lester, USA
Dr. Ian Coulter

Spiritual Fitness

Dr. William P. Nash
CDR John Van Dickens, USN
Chaplain (COL) O. Wayne Boyd, USA
Chaplain (COL) Michael Dugal, USA
Evette Pinder
Dr. Jeffrey Rhodes
Matthew Fritts, M.P.H.
Dr. David Hufford
Chaplain (CAPT) Mark Steiner, USN
Chaplain (CAPT) Mark Smith, USN
Chaplain (Lt Col) Mark Campbell, USAF



Chaplain (CDR) Bradley J. H. Thom, USN
Chaplain (Col) Jerry Pitts, USAF
Chaplain Leon Page

Plenary

Admiral Mike Mullen, Chairman of the Joint Chiefs of Staff
RADM David Smith, USN
BG Rhonda Cornum, USA
CPT Dennis "DJ" Skelton, USA
Jonathan Peck
Dr. Larry W. Laughlin
COL Elspeth Ritchie, USA
Dr. David Hufford
CAPT Truman Sharp, USN
Maj Anthony Beutler, USAF
Dr. Adam Russell
Carolyn Craig
Joan Walter
Cindy Crawford
Eric Meade
Jerusha Haasenritter