

**The origins and development history
of the current
Manpower Selection and the Preventative Medicine Program**

The origins of preventive medicine being directly connected to manpower selection into military service are traceable back to World War I. However most of the development and implementation of standardized medical screening to determine which men were least likely to withstand the physical strain and other exigencies of being in combat happened during World War II.

The United States' entry into World War II brought with it a massive mobilization requiring getting large numbers of men into the armed forces having capability to perform well in combat. Medical careening and selection focused on putting large numbers of individuals into general military service or limited military service. If the examining physician believed that the general condition of the man would not allow him to perform satisfactorily in military service the individual would be rejected and not accepted into military service (classified as 4F).

[A large Army was needed immediately. About 3,800,000 men entered the Army during 1942, through inductions and enlistments. Physical standards had to be lowered to get the number of men needed, and limited service personnel were accepted at a fixed percentage of the quota.]¹

[A summary of a statistical survey carried out by Selective Service and appearing as Medical Statistics Bulletin No. 1 indicated that, of the first 2 million men examined up to 31 May 1941, examining boards disqualified for general military service approximately 1 million (50 percent). Of these rejectees, 10 percent (96,000) had cardiovascular defects, a figure exceeded only by deficiencies of the teeth (188,000) and the eyes (123,000) and by illiteracy (100,000). A subsequent and somewhat more detailed report from the same source on the causes for disqualification for general service in 18- and 19-year-old registrants indicated that 23.8 percent of the white youths were so disqualified, whereas, of Negroes, twice as many (45.5 percent) were disqualified. Cardiovascular defects were in fourth place for the white group and in third place for the Negro group. Valvular disease and hypertension in particular were more prevalent among the Negroes. Experience with the older registrants showed a similar distribution.]²

[Approximately 38 percent of the disqualified draftees were classified as 4F because of neuropsychiatric defects, as follows: For neurological reasons, 6 percent; for psychiatric reasons ("mental disease"), excluding mental deficiency, 18 percent; and for mental deficiency, 14 percent. ... World War II rejection rates for neurological defects were 2.3 times as high as those in World War I; the rejection rates for psychiatric disorders were 7.6 times as high in World War II as in World War I. Especially high were the rejection rates for psychiatric disorders ("mental disease"), excluding mental deficiency; they were 15.3 times as high in World War II as in World War I.]³

As World War II progressed, it became apparent that developing a standardized medical examination screening method could and would improve both efficiency and effectiveness in the utilization of available manpower. The medical screening and selecting examinations would

classify individuals according to their functional capacities to perform general military service and limited military service.

Initially and during most of World War II the nature of determining functional capabilities had less to do with classifying into any specific military occupation or duty and more to do with assigning individual to various types of units. Generally the manpower selection problem from the preventive medicine perspective was a problem of efficiently and effectively getting enough men to fulfil duties in a combat division while also getting enough men to fulfil highly-technical duties in combat support and rear area units. The criterion orientation was to put the right man in the right job for the military to win the war and not to put any individual into any specific vocational or technical occupation the individual desired to do.

Under this criterion emerged three primary preventive medicine problems of concern connected to manpower selection. The first concern was to determine fitness of the individual for the rigors of general military service or limited service. The second concern was to avoid burdening medical facilities with unqualified personnel. The third concern was to identify the individual's ability to adapt themselves to function successfully after a period of training. This was to prevent unnecessary retraining.

This resulted in the "Physical Profile Serial" method being devised, published and implemented on 22 May 1944. Patterned on the PULHEMS System, which had been developed in the Canadian Army, the "M" which stood for mentality and intelligence was omitted from the American factors because it was considered adequately covered by the Army General Classification Test. The profile factors adopted became the current PULHES physical profile system where each letter of the acronym represented six factors in an individual which were to be evaluated: P-general physical stamina and strength; U-upper extremities; L-lower extremities; H-hearing; E-eyes; S-psychiatric evaluation. Each of these letters had four potential grades (1, 2, 3, and 4).

A one (1) rating in each of the six profile factors (111111) indicates absence of medical defects and conditions considered disqualifying for general military service.

A two (2) rating in one or more of the six profile factors (example: 111121) indicates presences of a reportable medical defect, condition or ailment that while not considered disqualifying for general military service does impair or compromise an individual's ability to perform or function sufficiently to be of concern.

A three (3) rating in one or more of the six profile factors (example: 111131) indicates sufficient presence of a reportable medical defect, condition or ailment exists that the individual is to be classified "general service with waiver for physical disabilities." The waiver document was to specify the kind of disability the man suffered, including such remarks as "not to be assigned to duties requiring heavy lifting," for example, or "not to be assigned to duties requiring a high degree of visual acuity" These remarks were inserted both to help the man's

commander decide what kind of a job to give him, and to protect the man against possible misassignment.

A four (4) rating in one or more of the six profile factors (example: 111141) indicates the individual is medically unfit for military service and is rejected from entry into military service.

Although the prevailing assumption when the United States entered into World War II (7 December 1941) was all men should be able to fight. A man was generally considered fit for combat if he was fit and not over forty years old.

Throughout the major portion of WWII there were only two physical classifications used: general and limited service. Although classification for job placement was carried out by an extensive program of testing and interviewing so to best match the individual's training, experience, and aptitudes with his military assignment, the process lacked no simple or standardized system of assessing the individual's physical stamina as a part of the classification for job assignment.

The PULHES system became particularly helpful when transfers of large numbers of troops were to be made from one type of unit to another since it was possible to check PULHES serial numbers quickly in order to determine who was physically capable of serving in the new assignment.

[It was the great demand for replacements overseas in the latter part of 1943 and in 1944 that caused the War Department to believe that physical rather than occupational classification should be the major emphasis for determining assignment of enlisted men. After an experimental period of about two months, a new policy based upon physical fitness went into effect in May 1944.]⁴

Medical screening was set up to eliminate the unfit from military service rather than to classify the fit into any specific military occupation or to determine fitness to participate in performing any specific military duty. It was not until a year so into the war did physical standards for certain military occupational specialties begin to get considered, developed and implemented.

[In June 1942 medical standards were prescribed for the forthcoming organization of the first Ranger Battalion. Both physical and mental standards were defined more precisely. Vision had to be twenty-twenty without eyeglasses, hearing normal, and blood pressure within limits normal for a man of twenty-five. Men with cardiac defects, slow reaction time, removable dentures, night blindness, or evidence of psychological disorders were disqualified.]⁵

[In July 1943, standards were put into effect for officers and enlisted men engaged in training and service in marine and simulated marine diving and in the use of rescue apparatus.

In October 1943, physical qualifications for parachute duty for both officers and enlisted men were adopted. The list of disqualifying defects for this type of service dealt chiefly with orthopedic conditions.

In the fall of 1944, The Surgeon General's Office established physical standards for civilians going overseas for service with the Army. The qualifications incorporated were expected to be merely a guide to examiners and not to be applied without discretion.

The Army Air Forces also carried out considerable experimentation to arrive at valid tests for determining physical aptitude for aircrew training.]⁶

[Army Air Force policy prescribed that older men, even those qualified physically for general service, be assigned to occupations related to their civilian experience and to permanent installations where they could replace younger men for combat duty.]⁷

Awareness needs to be obtained and kept that purpose of any military "Physical Profile Serial" method is not concerned with average health or good health, but rather with human performance to be used to perform and accomplish general military duties or limited military duties for the duration the individual is anticipated to be needed and useful in doing such duties. In this regard manpower selection accomplished by medical screening is indifferent to average physical fitness to perform in a peacetime military environment or to perform in the typical civilian workplace environment. The intent is to predict suitability, adaptability, and durability of human performance capability in terms of availability of the individual to be recycled into combat operations until the war is over. In this regard susceptibility to or succumbing to combat stress has no demarcation of average or normal pertinent to conventional military operations and special military operations.

Meaningful understanding came about during WWII that all combat troops should endeavor to achieve a "high standard of physical fitness regardless of age-for military combat takes no cognizance of age."⁸ Further this understanding substantiated "a close relationship exists between physical fitness and mental and emotional fitness."⁹

[It was determined that with five or six 50-to-60-minute periods a week it is possible to bring poorly conditioned men up to a high level of physical fitness in a period of approximately 12 weeks. This however, even for the average individual, could only happen if the Physical Training Program is properly planned and scheduled.]¹⁰

Brought along with this understanding was realization peak fitness had to be sustained once the individual obtained it. Consequently time was allotted for physical fitness training and carefully worked out fitness model schedules were developed and recommended.

[The men reach a peak beyond which they appear to show little improvement. The problem is to maintain them at this level.]¹¹

Although physical fitness necessary for combat takes no cognizance of age, it was further recognized both achievable and sustainable peak fitness declined with age. Consequently for the high standards of desired combat fitness for testing scoring purposes the fitness test scoring minimums for individuals beyond 30 years of living were adjusted to correlate to being younger than 30 years of age.

[In combat, where severe physical demands are made upon the troops, all men, regardless of their age, must have the strength, stamina, agility and coordination to meet the situation. When individuals pass 30 years of age, it becomes increasingly difficult for them to reach and maintain a high level of physical fitness. Ample evidence is available that this can be done. But these men must work harder, longer, and more conscientiously at conditioning themselves; they must practice hygienic health habits; and they must learn how to conserve themselves.]¹²

[ADJUSTMENT FOR AGE. However, for the purpose of scoring, the standards tend to drop one point for each year beyond 30. Thus, a score of 50 (Table III) made by a man of 40 is equivalent to a score of 60 made by a man of 30 or younger.]¹³

The global war fighting activities encountered during WWII also resulted in the first definable concerns of the complications of obtaining and sustaining physical fitness of combat forces when deployed to regions having elevations several thousands of feet above sea level. As hundreds upon hundreds of troops were moved rapidly from areas of low elevation to areas of high altitude elevation it became undeniably medically apparent it was best if the amount of amount and intensity of physically demanding activities be limited or reduced until the troops adapted to living and working at such high altitudes.

[High Altitude. Certain problems are encountered in conditioning soldiers who are stationed in high altitudes. Physiologists have shown that under such conditions the heart undergoes greater exertion during exercises. It is particularly important that only light exercises be given in the early days of residence at such altitudes. Troops become physiologically adjusted to high altitudes within a few weeks by means of adaptation of the blood circulatory mechanism. After this has occurred, they may take a progressively greater amount of exercise. The amount and intensity of exercise which can be given safely is governed by the degree of respiratory distress, which should not exceed the limit for low altitudes.]¹⁴

Presently, the efficient zone of human adaptability in terms of near-ideal physiological environment is considered to extend from sea level to 10,000 feet although some acclimation for some individuals may be required at elevations between 8,000 and 10,000 feet. It is at altitudes at and greater than 10,000 feet where reduced atmospheric pressure can potentially place considerable stress on the individual's cardiovascular system resulting in inadequate oxygenation of the blood and impairment to function at full capacity.

Generally, from an athletic physiology perspective high altitude starts around 5000ft/1524m above sea level where an absolute atmospheric pressure of 12.2 psi is encountered. Starting at around 5000 feet the overall measure of maximum VO₂ physical performance drops 3% per thousand feet of altitude gain.

The necessity for required supplemental preventive medicine screening when durability and reliability of the necessary human performance makes it reasonable to do so further demonstrates fitness for general military service is not a universal physical constant having application to all

military mission and human performance capability needs. The existence of Flying Duty (Class 1, II, and III) medical examinations, marine diving duty medical examinations, Airborne training and duty medical examination, SERE training and duty medical examinations, Ranger Duty medical examinations, Special Forces Duty medical examination, and Special Operations Duty medical examinations demonstrates PULHES is supplemented with other preventive medicine screening when durability and reliability of the necessary human performance makes it reasonable to do so.

The PULHES screening and selection system from its inception has had significant deficiencies in determining an individual's suitability for combat duties pertinent to expectation of ability of the ordinary individual to withstand stress and strain of combat and to continue fighting until he or she could not. The deficiency of most concern is psychiatric and psychological criteria at the time of examination for military service generally have not proved a reliable index for efficiently predicting future behavior. During and since World War II it has been consistently established greater reliability in predicting future human performance connected to emotional-and-mental fitness can be accomplished by observing individuals with possible or potential psychiatric difficulties under military conditions, rather than by psychiatric screening, at the time of their examination. As a result, the PULHES psychiatric standards and the psychiatric processing procedures are inadequate in properly identifying borderline conditions, particularly those that hadn't yet manifested sufficiently to be diagnosed and treated prior to any military medical screening.

[May 22, 1944: In concept, PULHES was based primarily upon a numeral scoring of the functions of the various organs and bodily systems. Under all categories of PULHES, with the exception of *S*, a numeral scoring from 1 to 4 was utilized, the numeral 1 representing normal function and the numeral 4 representing below minimum standards for induction. For the psychiatric factor, 5, numeral 2 was omitted. To obtain ease of application, the first two numeral ratings were equated with a high level of physical and mental fitness and thus represented the general military service category. Numeral 3 identified individuals with defects which prevented the individual from being classified for general military service, but which considered the person acceptable for limited service. Numeral 4 represented incapacities that were below minimum physical or mental standards for induction.]¹⁵

[30 June 30, 1945: The Physical Profile Serial was revised in another supplement to MR 1-9. Whereas, formerly numeral 1 under *S* (neuropsychiatric) designated personnel who were "emotionally stable and those with transient mild psychoneurotic manifestations incident to imminent departure for oversea assignment," in the revision, numeral 1 simply included individuals who had no psychiatric disorder. The revision also added a numeral rating of 2 under *S*, which included: "Mild transient psychoneurotic reaction. Mild psychopathic personality. Borderline mental deficiency." Numeral rating 3 under *S* was enlarged by adding "Mental deficiency, mild in degree." Numeral 4 was changed from "Below minimum standards for induction. Disqualifying except for those who had performed adequately in current assignment," to "Psychosis (or authenticated history of). Moderate or severe chronic psychoneuroses. Severe transient

psychoneuroses (situation). Marked degrees of psychopathic personalities. Marked mental deficiency."]¹⁶

Presences of neuropsychiatric maladies with personality and behaviors symptoms sufficient to interfere with military efficiency are effectively screened for. The deficiency is in screening for borderline asystematic neuropsychiatric maladies. These asystematic neuropsychiatric maladies become apparent when the individual is exposed to extraordinary duress, peril, and physically demanding activities.

[Because of the emotional stress of battle, troops fail to consume the available food even when other factors, such as acceptability of the food, are satisfactory and lose weight during the very active stages of combat regardless of the ration they are fed. For that reason, the concept of rehabilitation feeding at the end of each active combat period developed in all theaters. Commanders gradually became aware that men could go for days or weeks on slightly inadequate rations provided that they were very well fed during their rest periods. This concept is of real importance and needs additional study.]¹⁷

[Although performance of combat crews generally indicated that they could be "flown to death", this also indicated aircrews could be flown to a state of advance combat inefficiency. To eliminate problems of advanced combat inefficiency determinants were used to set a point in the tour (typically number of combat sorties or combat hours flown) where flyers could be removed from flying combat sorties. Sortie or combat hours flown end of combat tour points varied among the combat theaters and adjustments were made throughout the war to correspond with changing attrition (survivability) rates and operational conditions.]¹⁸

The factors of stress, lack of moral fiber and certain psychiatric disorders are closely interrelated in neurotic breakdown of a soldier in battle. However predicting and preventing neurotic breakdown in individuals selected to lead others in battle is also of critical concern pertinent to obtaining and sustaining combat effectiveness of tactical units.

[Some officers rotated prior to arrival of replacements were released by their commanders because they felt these officers had reached a breaking point resulting from a long period of continuous combat and were thereby rendered ineffective, nonaggressive and detrimental to the combat effectiveness of their units if retained.]¹⁹

[Eighth Army complained that a number of officers were reluctant to command troops in action and asked that remedial or punitive steps be taken, but in February there was still evidence that proper disposition was not being made of substandard officers. As late as June 1951, commanders were encouraged to make use of their powers under AR 605-200, 615-369, and 615-368 to eliminate ineffective or undesirable personnel.]²⁰

The malady known as neurocirculatory asthenia gives best example of how mind and body are inter-reliant. This malady not only exposes that routine electrocardiograms would be of little or

no value from the military standpoint in demonstrating cardiac abnormalities not evident on physical examination, it also demonstrates impaired or compromised mental and emotional fitness can weaken physical fitness and other human performance capabilities.

The malady known as neurocirculatory asthenia is a combination of functional nervous and circulatory disturbances with fatigue and precordial pain. It is a syndrome having various of other names attributed to it such as irritable heart, *cardiac muscular exhaustion*, nervous heart, hyperthyroid heart, shell-shock heart, and others. The condition occurs alike in civil and military life, except that the rigors and restrictions of military life often caused the syndrome to become apparent, where it might have remained in abeyance under civil conditions or during peacetime military service conditions. The syndrome is often unnoticed, it unexpectedly most often presents when an individual is taxed beyond their strength or over when exerted. Hereditary influences are definitely traceable in most instances.

[The disease is not in itself a fatal condition and, during the war, when death in these subjects occurred from concurrent or complicating conditions, ...

It is because of cardiac signs and symptoms that most cases appear for examination, and it is also because of these dominant manifestations that most cases become inadequate. Again, most of the suffering, in so far as actual physical distress is concerned, is due to cardiac disturbances, and much of the mental agony and apprehension is likewise caused by heart signs and symptoms.

Physical factors rarely precipitated these symptoms, though occasionally they would appear in their most exaggerated form after drill or otherwise when more or less physical exhaustion was also present. They were always most evident when cardiac disturbances were most annoying. They showed throughout a very definite association with emotional and nervous factors.

Closely associated with the nervous manifestations of the disease is a condition of asthenia, or early exhaustibility, which was evident in every branch of activity, mental or physical.

... it appears unnecessary to point out that the physical endurance of these men is definitely subnormal, and no matter how determined or how well trained men might be, many of them broke under the stress of military service. This was particularly notable in certain officers of the Regular Establishment who were in all respects normal and well-prepared men, but who, having this complex as a basic state, failed in endurance when put to the severe test of military life as it existed in the war.]²¹

Neurocirculatory asthenia lacks causal connections to motivation or attitude of the individual to do the duties or task, neither is it a case of malingering to avoid doing something or a case of cowardice. The critical perspective to consider is there is little, if any value, from a military standpoint to cause rejection for general military service. It's simply not feasible or efficient to selectively screen individuals for conditions such as neurocirculatory asthenia unless there is a mission need or human performance reliability and dependability need to do so.

Such selective psychiatric screening is reasonable for screening and selecting individuals best suited for special physically demanding military training and military duties performed in vastly different perilous environments under varying degrees of stress, and often with a minimum of personal supplies and equipment.

Selecting men for suitability to perform military duties in a range of vastly different perilous environments under varying degrees of stress, and often with a minimum of personal supplies and equipment requires a many day period observation of their performance in a training environment simulating conditions and situations beyond their capacity and experience. Generally the incidence of neuroses among trainees in training centers is highest during the third or fourth week of training. Basic military training to a certain extent is several weeks of exposure to a constantly supervised challenging regimented military environment for this reason.

Further the Entry Level Separation essentially establishes the first 180 days of continuous unbroken active military service as an observation period to determine if an enlisted service member is unqualified for general military service and limited military service for various reasons that among them includes failure to adapt to the military environment. The preventive medicine aspects of this administrative separation is it promotes the readiness of the Military Services by providing an orderly means to separate individuals who are found to be medically unfit or not qualified for general military service or limited military service. The critical aspect of the entry level separation is reasonable effort is expected to be made by the service member's chain-of-command to provide the service member with the training, motivation, and professional leadership to enable them to meet required standards of performance, conduct, and discipline before resorting to the Entry Level Separation to reject the service member during the first 180 days of entry into active military service as not being suitably physically, mentally and or emotional fit for military service.

Preventive medicine in PULHES system of screening individuals for military service straddles the paradox of determining fitness of individuals for general and limited military service doesn't by intent screen fitness of individuals to perform what is considered extremely hazardous service requiring significant physical conditioning.

Such extremely hazardous service expects the service member to be ready at all times to perform no-notice missions under extremely adverse conditions. Further the service member self-asserting their physical, emotional, and metal fitness to be there participating in extremely hazardous service often overestimate their fitness to be there. Being there with effective and efficient human performance capability requires much more than the courage and ability to do a certain number of push-ups and chin-ups to be there.

Providing answers to questioners during interviews and taking administratively given objective test such Tailored Adaptive Personality Assessment System (TAPAS) and Adaptability Rating for Military Aviation (ARMA) test are inadequate as such methods fail to expose the individual to environment simulating conditions and situations beyond their capacity and experience that they must adapt to and effectively function in if not thrive in. Military screening and selection courses for such purposes must simulate the operational environment these individuals are expected to perform their duties in. For example if swimmer duties are expected to be performed in the ocean with harsh climatic and weather induced sea states then any formal screening must

to some reasonable degree expose the individual to such duress and physical demands to determine how well mentally and emotional the individual can adapt to cope with and perform effectively as a swimmer in such environment.

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⁹ FM 21-20 Physical Training, War Department Field Manual, Washington D.C., 1 January 1946. p 1, 2, 5,

¹⁰ FM 21-20 Physical Training, War Department Field Manual, Washington D.C., 1 January 1946. p. 34

¹¹ FM 21-20 Physical Training, War Department Field Manual, Washington D.C., 1 January 1946. p 34

¹² FM 21-20 Physical Training, War Department Field Manual, Washington D.C., 1 January 1946. p 7.

¹³ FM 21-20 Physical Training, War Department Field Manual, Washington D.C., 1 January 1946. p. 345

¹⁴ FM 21-20 Physical Training, War Department Field Manual, Washington D.C., 1 January 1946. p. 7

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