Aging effects pertinent to entry classification into and award of certain AFSCs

There is no precise method for determining the rate or degree of aging and attaining any birthdate during life is not a medical diagnosis. Chronologically, life limiting biological, anatomical, and physiological functional capacities of the human body begin changing in the typical human body starting at 30 years of life. Although aging itself is not a medical disqualification the physical, psychological, and social changes that occur with aging do impair ability to perform task and mission safely. Aging has identifiable risks that can be effectively mitigated if understood and appropriate action is taken.

The predominant concern is entry classification applicants/candidates more than 27/28 years of age into the pararescue specialty is these applicants/candidates are greater endamage risk particularly if teen years and early adult years are associated with sedentary habits or sedentary lifestyle. This endamage risk at minimum is higher potential for overtraining syndrome, as these persons will tend to push themselves past healthy physical and emotional limits in their pursuit of entry classification (job placement) into physically demanding military occupation such as the Pararescue specialty. There are also further into the future progressive aging endangering concerns pertinent to accomplishing the physical exercising necessary to sustain and maintain performance qualities up to par for two years, three years, four years, or subsequent enlistments once the 3-skill level AFSC is awarded. Consequently, entry classification into a physically demanding military occupation potentially starting at 30 years of life has increased endamage and endanger risks that are directly connected to obtaining and effectively managing the available force (manpower) without impairing or degrading operational capability.

Although Air Force diversity policies (AFI 36-7001) changed during the 1970s to disfavor and discourage using age as a basis for admission to any training or development program, the maximum age of 27/28 years remained policy for accession purposes (AFI 36-2002) until 14 June 2014.

> AFI 36-2002 *Regular Air Force and Special Category Accessions*, Attachment 2, CONDITIONS THAT MAKE APPLICANTS INELIGIBLE TO ENLIST.
>
> Changed from:
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> A2.1.16. Applicant is less than 18 years of age or more than 27 years of age. NOTE: Title 10, USC, Section 505, prohibits enlistment of anyone 35 or over. In unique or unusual cases, route age waivers for applicants between 27 and 35 years of age, through chain of command to HQ AFPC/DPPAES:
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> Changed to:
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> A2.1.16. Applicant is less than 18 years of age or more than 39 years of age. AFRS/CC, with AF/A1 approval, may set a more restrictive age limit.

The predominant prior to June 2014 entry classification (job placement) source for able bodied students or trainees older than 27/28 years were service members leaving one AFSC to classify into a new AFSC and separated/discharged from military service applicants/candidates seeking a prior-service enlistment to entry classify into a new AFSC. Unfortunately able bodied

applicants older than 30 years of age statistically tend to more likely have disqualifying medical conditions or due to sedentary habits have greater difficulties obtaining and sustaining necessary level of occupational fitness to safely and with reasonable on-the-job longevity during a single enlistment or multiple enlistments (lower career retention rate/higher student attrition rate) perform pararescue duties.

Air Force risk management policies (AFI 90-802) judiciously emphasize the importance of identifying risks. There are common aging events the human body is susceptible of beginning around 30 years of age which have potential to impair functional fitness sufficiently to compromise the ability to safely and effectively perform task and mission in broad range of training and operating environments. This aging deterioration is not of itself reason to believe an individual cannot perform task and mission in the operational environment as proper exercise and diet can hinder decline in peak biomechanical efficiency and performance (aerobic power, strength, endurance, flexibility) even though most organs seem to lose function at about one percent a year, beginning around age 30.

- The physical peak for most humans, in most sports, is between 25 and 35 years of age; during this peak period, the well-conditioned athlete can create a confluence of muscular strength, peak cardiovascular and oxygen transport, speed and reaction time, and mental capabilities (including the ability to deal with competitive pressures), all bound together by a desire to succeed.

- Cardiovascular aging in terms of decline in maximum heart pumping rate, oxygen extraction, and aerobic capacity resulting from arterial stiffening, vasoconstriction, elevated systolic blood pressure and increased pulse pressure, thickening of the left ventricle wall, reduced diastolic filling rate (with filling slowing after age 20 and reaching 50% loss by 80), impaired cardiac reserve, alterations in heart rate rhythm (i.e., decline in beat-to-beat fluctuation with aging), and prolonged cardiac action potential. The heart of a 20-year-old is capable of pumping about 10 times the amount of blood that is actually needed to keep the body alive. After age 30, an average of 1% of this reserve is lost each year.

- Lung capacity decline. The lungs undergo a phase of growth and maturation during the first two decades of life and achieve maximal lung function around age 20 years in females and 25 years in males. Maximum oxygen consumption (VO_2 max), an objective surrogate of fitness, peaks between 20 to 30 years of age, then declines by a rate of about 1% per year depending upon individual level of physical activity (declining more in sedentary compared with physically active adults).

- Aging interferes with fracture healing. Most people will reach their peak bone mass between the ages of 25 and 30. Men have a higher peak bone mass than women. Men accumulate more skeletal mass than women do during growth, and their bone width and size is greater. Although the body is continually removing old bone and replacing it with new bone (a process called remodeling) after peak bone mass is reached, a gradual loss of bone begins. After age 40 less bone is replaced. Because women have smaller bones with a thinner cortex and smaller diameter, their fracture risk begins to increase sooner and a bit more than for men. Most women enter menopause between the ages of 42 and

55. As the levels of estrogen drop dramatically, women undergo rapid bone loss which further reduces bone strength and increases a woman's risk for fracture.

- Kidney efficiency decline at about 4 percent per decade beginning at age 30, including decreased blood flow, glomerular filtration rate, mass and weight.

- The amount of body fat goes up steadily after age 30 and may rise by as much as 30%. Fat tissue builds up toward the center of the body, including around the internal organs. However, the layer of fat under the skin (subcutaneous) gets smaller.

- Height Loss due to joint compression and posture change, beginning at about age 30 and accelerating with age resulting in a 1.2 inch loss for women and a 1.9 inch loss for men by age 70.

- Muscle mass and strength. Strength peaks around 25 years of age, plateaus through 35 or 40 years of age, and then shows an accelerating decline, with 25% loss of peak force by the age of 65 years. Muscle mass loss (sarcopenia), about 10 percent per decade after age 45. One reason for the drop in muscle mass and bone density is a drop in the male hormone *testosterone*, which declines by about 1% per year after the age of 40.

- Brain weight and volume decreases with age. Although neurological maturation, peaks in the mid-20s (about age 25) however the biological aging of the brain isn't absolutely connected to chronological aging. Also age-related brain tissue loss may vary greatly among different brain regions. Regardless aging does affect the speed with which cognitive and motor processes are performed. Age 30 appears to be a potential demarcation for a noticeable decline in perceptual speed (interpretation of sensory information) having causal connections to sedentary, poor dietary habits, and aging by disease disorders.

- It takes longer for the body to return to balance following a stress. The older person's body does not bounce back as readily as a younger person's body does from exercise, illness, surgery, or situational stress. Recovery/recuperation time usually is longer for older adults than for younger adults.

- Normal age-related changes often are exacerbated by the presence of chronic disease. Chronic health problems confuse normal aging with aging by disease.

- Chronic disease is sometimes a fact of life with older people, whereas with younger people acute illness is more prevalent.

- Exercise training is a clinically proven, cost-effective, primary intervention that delays and in many cases prevents the health burdens associated with many chronic diseases. However, extremely demanding high-intensity interval training may not be safe, tolerable or effective for improving functional performance (the ability to sustain effort at the necessary output to complete the desired task) for the less physically fit individual after the age of 30.

Entry classification (job placement and job entry training) has goal, objective and purpose to put able-bodied persons into an awarded AFSC with expectation this person will perform effectively in the awarded AFSC for duration of fulfilling the Military Service Obligation (MSO) remaining after being awarded the 3-skill level AFSC.

The technical skill/task performance required of persons performing pararescue duties require significantly expensive above average training to deal with rapid response not rehearsed rescue missions that seldom go by the training books or expectations due to minimal mission planning intelligence and permission planning preparation time. Age related health changes have a generalized undesirable impact of impeding the body's ability to recover from injury and rejuvenate after many hours and days of demanding strenuous physical activity. This aging impact not only increases potential of student attrition this aging impact also increases risk of an injury not healing properly and causing the student's medical separation from military service.

Although the initial Flying/Special Operations Duty/Marine Diving Duty/Parachutist duty medical examinations and standards (AFI 48-123, AR 40-501, NAVMED P-117) do consider determining the probability of age related health changes interfering with the safe performance of task and duties the reliability of such screening depends on the examinee disclosing health changes to the examining physician.

Physical Ability and Stamina Test (PAST) is generally ineffective in screening for disqualifying aging health changes as such short duration tests can be pushed through when sufficient exceptional self-motivation to perform enhances the effort.

While it is difficult to conceal age related health changes that are interfering with accomplishing training activities at a screening-selection Course of Initial Entry (COIE) such as the CRO/Pararescue Development/Indoctrination Course, if an age related medical disqualification is being concealed, there is risk the revealing agent can be a serious injury or death incident.

Obsolescence exists when a person is unable to maintain effective performance in current occupational core skills, tasks and duties. Obsolescence has many forms and variations in the degree to which training can prevent or overcome it. Obsolescence for most military occupations involves loss of technical skill and knowledge proficiencies (incompetence) and supervisory/managerial ineptness. Aging obsolescence is the loss of functional (occupational) fitness that is sufficient to impair the manner in which the individual is able to successfully and safely perform required day-to-day core occupational or core duty position skills. The degree of aging obsolescence varies by individual, but for job placement of untrained individuals the decreasing baseline power and anaerobic capacity levels do make some people untrainable as the aging impairment makes them low responders to occupational-specific strength, endurance, and stamina training.

Aging obsolescence does not affect all Air Force military occupational career paths equally as the programed occupation career path is a progression into duty positions having less day-to-day physical demanding job tasks and activities. For most Air Force enlisted occupations the provisions of Selective Reenlistment Program (SRP), Career Job Reservation programs, high year of tenure methods and age 55 restrictions stipulated in AFI 36-2606, Reenlistment in the United States Air Force, sufficiently reduces aging obsolescence risk as technological

incompetence and supervisory/managerial ineffectiveness is the foremost concern. It is the rare career military occupation having an on-the-job safety and survivability in accomplishing mission necessity to ensure current accession screening methods (i.e., Medical examination standards, ASVAB, PAST) are sufficient to ensure the new capability has trainability and once trained is a reliable and dependable operational capability.

Entry classification into a critical skill AFSC such as pararescue after the age of 30 years puts such aging applicant/candidate at higher risk of being low responders to physical fitness endurance and strength training regardless of how fit or unfit when arriving as a student to the course of initial entry (COIE) for award of 3-skill level AFSC. Baseline power and anaerobic capacity levels that determine individuals trainability to do physically demanding occupational task and duties decrease as aging occurs regardless of how fit or unfit the individual is. Unfortunately, trainability has an unbreakable occupational human systems integration connection to usability and sustainability of human performance capability to meet mission needs once the individual becomes trained and qualified. The individual who struggles through required entry training with low baseline power and anaerobic capacity levels is the individual who struggles doing required proficiency and upgrade training when assigned to the first line unit after award of 3-skill level. This introduces the question of approximately how many authorizations will it take to operate, maintain, train and support the full mission need capability if a higher aging obsolescence rate becomes acceptable for job placement and in the first term enlisted airman demographics. The diversity quota question becomes more precisely at what point does job placement (entry classification) training cost increases and accepting higher operational risks become unacceptable?

Obsolescence in all its forms, but particularly aging causals contributes to struggle to sustain mission ready qualifications and loss of fitness for duty and loss of mission availability (AFI 10-203). This high potential for aging obsolescence being mission impairment and being operational risk compromising safety and causing mission failure is why policy of prior service pararescue personnel returning to the career field and who have not practiced pararescue skills for five years or more must meet entry classification qualification standards (Pararescue Physical Fitness Evaluation, Class III/Special Operations Duty physical and etc.) and Complete the Pararescue Apprentice Course (non-waiverable) is in the 1T2XX Career Field Education and Training Plan (CFETP). Also prior to about 1988 guidance was a bit more specific in stating prior service personnel entering the Air Force for pararescue duty with comparable skills, i.e., SEALS, Special Forces and Air Force members leaving one AFSC to entry classify into pararescue are considered on an individual basis with preference such individuals be less than 32 years of age.

While physical conditioning is a cornerstone of combat effectiveness it is also the only reliable preventive approach for slowing down the onset of occupational obsolescence caused by aging. Occupational-fitness standards and testing exist because at some point individuals may know at a gut level they are no longer able to perform task and mission safely, but at a conscious level denies it. Occupational-fitness standards and testing exist because at some point supervisors and managers need a tool to identify decreasing baseline power and anaerobic capacity levels in an individual due to aging is to the point of being an unacceptable training and operational risk. Consequently, the USAF Pararescue specialty was the first to implement specific occupational-fitness standards and other policy provisions to ensure strength and endurance to meet the intense

physical challenges inherent to performing pararescue duties are being sustained. The policy provisions direct when such marginal performance occurs, the individual should be considered for removal from training and/or permanent disqualification from the PJ or CRO AFSC, IAW AFI 36-2201, AFI 11-402, Aviation and Parachutist Service, Aeronautical Ratings and Badges, and/or other applicable AF policy. These policies further stipulate when such marginal performance occurs, the individual should be considered for removal from training and/or permanent disqualification from the PJ or CRO AFSC, IAW AFI 36-2201, AFI 11-402, Aviation and Parachutist Service, Aeronautical Ratings and Badges, and/or other applicable AF policy.

Respecting the biologically generated capability gap related to aging and human performance regardless of creed or color or gender or sexual orientation is the primary applied concept of establishing career occupational-fitness standards. The intended purpose is trainability for occupational core task development and once the individual is trained that core occupational skills can be performed safely and with reasonable survivability in physically demanding and psychologically challenging operational environments. Any development and implementation of a combined gender (unisex) standards for occupational-fitness and combat fitness must consider occupational career path development and utilization as to who is trainable and who will have the least struggle in obtaining and sustaining physical ability and stamina sufficient to perform core occupational task and duties safely in the operational environment.

Any implementation course of action favoring numeric goals to increase numbers of aging individuals by compromising doing task safely and with survivability in the operational environment is acceptance of mediocrity and avoidable operational risk. If such quota diversity course of action is decided, the risk presence of aging obsolescence will be statistically higher with an unavoidable interrelated capability loss in dependability, reliability, and availability. The statistically higher evidence will have form of more numbers of unnecessary serious injuries, permanent disabling injuries, and death in the accomplishing of training and mission activities.

The entry and career retention occupational criteria for the Pararescue specialty by having focus on identifying individuals having the baseline power and anaerobic capacity levels necessary to have trainability and the baseline power and anaerobic capacity levels necessary to sustain and maintain the qualification necessary to do tasks without it being a constant disaster-prone struggle is effective and efficient risk management. Considering aging obsolescence has different biological influenced courses in the typical male and female (gender) human body starting at 30 years of life it may be prudent for basic qualification standards for entry classification into a critical skill AFSC such as pararescue require a be less than 30 years of age requirement for entry classification purposes with waiver possible for highly qualified applicants/candidates between ages 30 and 35 years of age. Having the right to serve is not the right to compromise the on-the-job safety of themselves and others or the right to impair mission survivability of themselves and others, and not the right to be the unnecessary and avoidable cause for mission failure.

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