

**BY ORDER OF THE COMMANDER
AIR EDUCATION AND TRAINING
COMMAND**



AETC INSTRUCTION 11-406

08 MARCH 2012

Certified Current 03 May 2016

Flying Operations

**FIGHTER AIRCREW CONDITIONING
PROGRAM (FACP)**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at www.e-publishing.af.mil for downloading or ordering.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: HQ AETC/A3FM

Certified by: HQ AETC/A3F
(Col Charles W. Catoe)

Supersedes: AETCI 11-406,
2 October 2000

Pages: 9

This instruction implements AFPD 11-4, *Aviation Service*. It supports the program outlined in AFI 11404, *Centrifuge Training for High-G Aircrew* and applicable AFI 11-2MDS G-Awareness Continuation Training programs. This instruction applies to AETC flying training students. It provides guidance and procedures for conducting the Fighter Aircrew Conditioning Program (FACP). This instruction may be used to develop an AETC-funded FACP for Air Force students in other than AETC-controlled flying training programs (for example, Navy flight training). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Forms 847 through the field through the appropriate functional's chain of command. This publication applies to AETC-gained Air National Guard and Air Force Reserve Command (ANG/AFRC) units. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <http://www.my.af.mil/afirms/afirms/afirms/rims.cfm>.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. Major changes include eliminating the Fighter Aircrew Conditioning Test, replacing it with aircrew fitness Education and Assessment.

1. Description and Goals

1.1. FACP implements targeted fitness early in the undergraduate pipeline with an emphasis on High-G fitness as part of Undergraduate Flying Training (UFT). FACP adds scheduled High-G fitness education and assessment to all AETC Undergraduate Flying Training (UFT), Introduction to Fighter Fundamentals (IFF), and fighter/bomber Pilot Instructor Training (PIT) and Formal Training Unit (FTU) courses.

1.2. The goal of the FACP is to improve the High-G fitness and execution of the Anti-G Straining Maneuver (AGSM) for fighter aircrew members and establish effective physical conditioning habits for all aircrew.

1.3. FACP is designed to help aircrew members develop a personalized, comprehensive approach to G-fitness early in their flying career. Sound physical conditioning habits not only improve performance in the G-environment, but may reduce or prevent injuries such as strains, sprains, and back and neck injuries. Conditioning should be specific to the duration and demands of the High-G environment.

1.4. The program consists of two phases: Education and Assessment.

1.4.1. The Education phase is designed to educate aircrews on the components of fitness that are most important for improving AGSM performance.

1.4.2. The Assessment phase is designed to highlight fitness strengths and weaknesses as a guide for developing a fitness program to improve AGSM performance. This phase assesses muscular strength and endurance, with emphasis on the most important muscles for AGSM performance (abdominals and lower body). The assessment establishes individual baselines and areas for improvement. For UFT students only, a “follow-up” assessment measures how well the student is progressing toward improved G-fitness.

1.5. FACP implements fitness monitoring (for UFT students) to ensure adequate progression toward High-G fitness.

2. Scheduling and Participating in Fitness Training

2.1. UFT students must receive FACP Education and Assessment during the preflight phase. Those students tracked to fighter/bomber continue to participate in FACP during the advanced phase. Students who track-select to Low-G aircraft are not required to participate in FACP, but may participate on a voluntary basis.

2.2. All students in T-6/T-38 PIT, IFF, and fighter/bomber FTU, FTU upgrading instructor pilot (UIP), and transition/requalification training must participate in FACP. These students receive FACP Education and Assessment to assess their physical fitness with emphasis on High-G fitness, but are not required to do a follow-up assessment.

2.2.1. Students who are reassigned to High-G aircraft following a non-flying assignment or who are converting from a Low-G aircraft will receive both phases (Education and Assessment) of FACP training. Senior officers (colonel and above) will also receive both phases of FACP training.

2.2.2. Experienced High-G pilots who have flown within 3 years in Sustained High-G aircraft (SHGA) as defined in AFI 11-404 will receive Education phase only. The 3 years are counted from the last flight as an assigned active aircrew member in a SHGA to formal course entry date.

2.3. For joint service and international students in Air Force training programs, participation in FACP is highly encouraged.

3. Roles and Responsibilities

3.1. Flying Squadron Commanders

3.1.1. Work closely with the FACP instructor (or trained Air Force personnel at joint training sites or ANG/AFRC units) to identify those students that may need improved G-fitness. Several factors may be used to determine that a student needs improved G-fitness, including FACP Assessment results, HUD tape reviews, or inadequate G-performance in the aircraft.

3.1.2. Review initial FACP Assessments of those students that are identified by the FACP instructor to need improved G-fitness.

3.1.3. Review follow-on FACP Assessments to ensure that all students are participating and progressing (not regressing) in the FACP.

3.1.4. Request individualized G-fitness training programs for flying training students (as needed) from the FACP Instructor (or trained Air Force personnel at joint training sites or ANG/AFRC units) when appropriate. For instance, a student demonstrates early physical fatigue or difficulty in executing an effective AGSM.

3.1.5. May delegate responsibilities listed in 3.1. to Flight Commanders.

3.2. Aerospace and Operational Physiological (AOP) Training Unit (or trained Air Force personnel at joint training sites or ANG/AFRC units).

3.2.1. AOP Flight Commander ensures that AOP officers, fully-qualified technicians, or other AF personnel (at joint training sites or ANG/AFRC units) have been trained to execute the FACP. This training will be documented in the FACP instructor's training records. The following courses/certifications fulfill this training requirement:

3.2.1.1. National Strength and Conditioning Association's Certified Strength and Conditioning Specialist Course (units will resource registration and travel).

3.2.1.2. Exercise Principles and Methods Course (HQ AETC/A3T provides subject matter expert instructor and course curriculum). Units will resource travel (supplies and travel associated with physiology trainings are provided by metric funding).

3.2.2. FACP Instructors.

3.2.2.1. Upon request for individualized G-fitness training programs for flying training students, develop fitness programs specific to the student.

3.2.2.2. During the Education phase, educates students per syllabus requirements. FACP Instructor demonstrates a variety of exercises to ensure students understand proper form, split training options (using more than one exercise per muscle group),

and variety to discourage stagnation and ensure conditioning progress. Students will then demonstrate effective performance of each exercise following a warm-up period.

3.2.2.3. During the Assessment phase, the FACP Instructor monitors students to ensure proper form and safety. The FACP Instructor will assist each student in determining an appropriate starting weight. The student documents the Assessment using AETC Form 1705 or a locally developed fitness log.

3.2.2.4. Executes the FACP Assessment using exercise equipment that represents the exercise effectively.

3.3. Flying Training Student

3.3.1. Following the Education phase, accomplishes an Assessment and implements the prescribed fitness program that targets G-performance, as determined by the FACP instructor.

3.3.2. Track their progress toward improved G-fitness until they accomplish the Follow-up Assessment during advanced phase or are track-selected to Low-G aircraft. Assessments and exercise sessions are documented in the student training folder.

3.3.3. Participate in at least 3 exercise sessions per week that include exercises to improve High-G fitness and execution of the Anti-G Straining Maneuver (AGSM).

4. Use of FACP in Selection

4.1. The FACP is a High-G fitness Education and Assessment program intended to educate aircrew members on one of the key components for optimizing G-performance. Fitness assessment scores alone are not a reliable indicator for success in High-G aircraft. Therefore, commanders should carefully consider the limitations of fitness alone as a selection discriminator.

4.2. Many other factors besides fitness may impact G-performance. These factors include G-situational awareness, task management, fatigue, dehydration, nutrition, illness, and G-protective ensemble. FACP instructors will emphasize the significance of these additional factors to students, along with the importance of evaluating oneself prior to each and every flight.

5. Training Elements

5.1. There is overwhelming evidence that physical fitness is important for optimizing flying performance in High-G aircraft. Specifically, anaerobic capacity and endurance play an important part in executing an effective AGSM. Several other elements also play a role in G-performance, creating the need for a comprehensive training program that covers all elements.

5.2. Fitness for G-performance requires several fitness elements including anaerobic (muscle strength and endurance) fitness, aerobic fitness, flexibility, and balance/stability. Additionally, neck stretching and strengthening as well as injury mitigation strategies will be part of this comprehensive approach. Proper form will be emphasized for all exercises. Safety will always be the top priority.

5.2.1. Anaerobic fitness is essential to performing an effective AGSM while minimizing muscular fatigue. In particular, core (abdominal and lower back) and lower body muscle (glutes and legs) tensing is critical to prevent G-related blood pooling and loss of blood pressure to the brain. Exercises that build strength and endurance for those muscle groups will be a major focus of the FACP. The principles of warm-up, split training and periodicity (cycling of weight/reps/sets) should be an integral part of FACP education.

5.2.2. Aerobic fitness (cardiovascular efficiency) increases blood supply to the working muscles which significantly reduces recovery time between engagements and sorties. Aerobic conditioning should be carefully matched to duration and intensity of the High-G environment. Higher intensity/shorter duration aerobic training should be emphasized as most appropriate for preparing students for the High-G environment. Lower intensity/longer duration aerobic training is also appropriate for longer term health.

5.2.3. Flexibility refers to the degree to which a joint moves through a normal, pain-free range of motion. Flexibility may contribute to a successful AGSM and reduce the risk for injuries. Decreased flexibility, on the other hand, may reduce physical performance and increase injury risk during flight maneuvers.

5.2.4. Balance/Stability may be improved by exercising muscles deep within the abdomen and back attaching to the spine or pelvis. Many movements originate at these muscles and form the source of an individual's stability. Training for stability involves training the body as a whole versus separate muscle groups. Exercises that improve balance and stability may contribute to a better AGSM and prevent short and long-term injuries that tend to result from the demands of High-G sorties. Balance/stability exercises may be accomplished while seated on stable or unstable devices and adding lateral, posterior, and anterior forces to simulate acceleration forces.

5.3. During the FACP session, students will wear Air Force PT gear or unit-specific PT gear.

6. Phases.

6.1. Education Phase.

6.1.1. High-G Fitness. FACP instructors will provide the knowledge to execute an effective fitness and conditioning program throughout the student's flying career to enhance their physical performance in the High-G environment.

6.1.2. Neck Stretching and Strengthening. FACP instructors will provide students with the knowledge necessary to reduce or prevent neck injuries through proper stretching and strengthening.

6.1.3. Exercise. FACP instructors and/or their assistants will demonstrate proper fitness techniques and specific exercises the student can perform to optimize High-G physical performance. FACP instructors will offer students variations of exercises for each applicable muscle area. The instructor will explain how to execute at least one exercise for each of the training elements listed in paragraph 5 of this instruction.

6.2. Assessment Phase.

6.2.1. FACP instructors will teach students how to conduct a High-G conditioning Assessment. An initial Assessment will be conducted by the student following the initial FACP education phase. FACP instructors will demonstrate the proper form for all exercises to be assessed and oversee students as they accomplish the Assessment.

6.2.2. The FACP Assessment is primarily an assessment of anaerobic fitness (muscle strength and endurance).

6.2.3. To reduce the risk for injuries, FACP instructors will lead students through a quality warm-up prior to the Assessment.

6.2.4. Recommended starting weights shall be determined by the FACP instructor. As a general rule, the starting weight will be based upon a 12 Repetition Maximum (12-RM); ie. the amount of weight for which the student can perform 12 proper repetitions. Establishing good form is the first goal of the program, and should be emphasized more than amount of weight. FACP instructors may use an alternative method to establish a starting weight for students; however, safety will be the priority in determining a starting weight.

6.2.5. Students will perform each exercise and document amount of weight/repetitions for each exercise using AETC Form 1705 or a locally developed fitness log. Upon completion of all exercises assigned by the FACP instructor, instructors will review Assessments and identify areas for improvement. Each student will be briefed on their particular strengths and weaknesses and advised on ways to improve muscular strength and endurance in those areas of weakness. Students will progress toward improved G-fitness by implementing a fitness regime (described during the Education Phase) and documenting exercise sessions in their grade book. This documentation will be maintained until the student accomplishes the Follow-up Assessment during advanced phase or are track-selected to Low-G aircraft.

6.2.6. Follow-up assessments will be performed when students track-select to fighters (advanced phase). Students will perform the same exercises assessed during the preflight phase, document the results, and turn in those results to the FACP instructor for review. At the discretion of the FACP instructor, additional assessments may be assigned to the student. International students are strongly encouraged to participate in the assessment phase of the FACP.

7. Documentation.

7.1. The student's FACP performance will be documented using AETC Form 1705 or a locally developed fitness log and annotated for completion in TIMS or applicable training management system. The student and the student's squadron commander (or designated flight commander) will receive a copy of the initial and follow-up assessment(s). The FACP instructor will maintain a copy of initial and follow-on assessments for 2 years.

7.2. Individual Counseling. FACP instructors who determine that a student needs additional fitness monitoring (based on assessment scores, HUD tape reviews, or inadequate G-performance in the aircraft) may counsel and schedule students for additional assessments.

WARNING

An acceptable FACP assessment *does not* guarantee acceptable performance in the G environment. High-G aircrews must consider the wide range of personal physiological factors and apply sound judgment in determining personal capabilities on any given day or sortie.

JAMES A. WHITMORE
Major General, USAF
Director of Intelligence, Operations,
and Nuclear Integration

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD 11-4, *Aviation Service*, 1 Sep 04

AFI 11-404, *Centrifuge Training for High-G Aircrew*, 28 Oct 05

AFPAM 11-419, *G-Awareness for Aircrew*, 1 Dec 99

AETCI 36-2205 Volume 1, *Formal Flight Training Administration and Management*, 29 May 09

Prescribed Forms

AETC Form 1705, *Fighter Aircrew Conditioning Test Score Sheet*, Date

Abbreviations and Acronyms

AOP—aerospace and operational physiology

AGSM—anti-G straining maneuver

FACP—fighter aircrew conditioning program

FTU—flying training unit

G—gravitational pull, unit of measurement

IFF—introduction to fighter fundamentals

PIT—pilot instructor training

SHGA—sustained high-G aircraft

UFT—undergraduate flying training

UIP—Upgrading Instructor Pilot

Attachment 2

FITNESS TRAINING LOG EXAMPLE

This table may be used to keep track of the weight/resistance used for each exercise. Individuals should add weight/resistance as exercises get easier.

Table A2.1. Fitness Training Log.

	Week 1-3 10-12 reps/set	Week 4-6 4-6 reps/set	Week 7-8 10-12 rep/set	Week 9-10 4-6 reps/set	Week 11
Squat					rest
Leg Curl					rest
Leg Extensions					rest
Calf Raises					rest
Bench Press					rest
Row					rest
Lateral Raise					rest
Crunches and Rotations					rest