



DEPARTMENT OF THE NAVY

CHIEF OF NAVAL AIR TRAINING
CNATRA
250 LEXINGTON BLVD SUITE 102
CORPUS CHRISTI TX 78419-5041

IN REPLY REFER TO:

CNATRINST 6410.2

00X2

05 JUL 2006

CNATRA INSTRUCTION 6410.2

Subj: AIRSICKNESS MANAGEMENT PROGRAM

Ref: (a) CNATRINST 1542.140C
(b) CNATRINST 1542.155A

Encl: (1) Airsickness Notification Form
(2) Airsickness Tracking Form
(3) Preprinted SF-600; Medical Evaluation of Motion Sickness
(4) Aircrew Rotational Training (ART) Procedures
(5) Airsickness Review Board (ARB)
(6) Airsickness Handout

1. Purpose. To provide the airsickness policy, procedures, and documentation for all CNATRA Flight Training Squadrons in order to manage Student Naval Aviators (SNAs)/Student Naval Flight Officers (SNFOs) who experience airsickness, per references (a) and (b).

2. Background. Airsickness, one form of motion sickness, is a common problem for students on initial entry into flight training. Airsickness is a normal physiologic response to abnormal motion and may interfere with progression through the flight portion of the Primary Multi-Service Pilot or NFO Training Systems. Symptoms may recur as students transition to more challenging flight maneuvers or aircraft with enhanced flight characteristics. Most students adapt to the flying environment quickly while others may require additional assistance to allow them to overcome symptoms of airsickness. Recommendations to help students prevent and manage airsickness include early intervention with education, training, and, if necessary, pharmacological and physiologic therapy. There are primarily two types of airsickness; "active airsickness" characterized by vomiting and "passive airsickness" associated with nausea and other discomforting symptoms but without active vomiting. Passive airsickness, for the purpose of this instruction, shall be managed in the same manner as active airsickness if the student's discomfort or nausea results in deviation from mission profile or affects the student's ability

05 JUL 2006

to complete tasks. Mild nausea that does not affect the student's ability to safely and satisfactorily complete the sortie shall be considered not significant for purposes of this instruction.

3. Discussion. The following operational and medical procedures are designed to provide individual attention and a reasonable opportunity for students who experience airsickness to adapt to the flying environment. Operational and medical personnel must strive to keep students motivated and flying on a regular basis. Students who experience recurrent symptoms of airsickness, whether active or passive, shall be placed in the Airsickness Management Program (AMP). Instructor Pilots (IPs) shall actively assist students in avoiding airsickness during the earliest phases of flight training. However, students who experience airsickness must still meet Maneuver Item File (MIF) standards in order to continue flight training. Students shall be graded against the course training standards, regardless of the impact of airsickness.

4. Action. The following areas of responsibility are assigned:

a. Chief of Naval Air Training (CNATRA) shall implement policy in consonance with the intent of this instruction, to ensure maximum training safety and effectiveness through standardized procedures regarding the management of airsickness in the flight-training environment.

b. Training Air Wing Commanders shall:

(1) Implement the AMP within Training Air Wings that conduct primary flight training. This training shall be placed under the cognizance and oversight of assigned flight surgeons and/or Aerospace Physiologists ((Aeromedical Safety Officer) (AMSO)) for SNAs and SNFOs who experience significant problems with airsickness.

(2) Through the use of the Airsickness Review Board (ARB), make the final determination when a student should be removed from training for reasons of persistent or recurrent airsickness.

c. Squadron Commanding Officers shall:

(1) Refer SNAs/SNFOs for participation in the AMP when appropriate and as outlined in this instruction.

05 JUL 2006

(2) Not schedule a SNA for a solo flight who has been actively or passively airsick on the preceding training mission.

(3) Schedule airsick students for training sorties as a priority during the Adaptation Phase (Phase III) of the AMP and upon the completion of Aircrew Rotational Training, (Phase IV), of the AMP.

(4) Convene an Airsickness Review Board as outlined in this instruction or when deemed appropriate.

d. Instructor Pilots shall:

(1) Provide at risk students assistance in overcoming airsickness. Early in T-34C/T6A training, the IP may assist the student in momentarily taking control of the aircraft, or if necessary, terminating the mission. As the student progresses in training, IP assistance will be decreased. During the last five sorties preceding initial T-34C/T-6A solo, IPs shall offer only minimal assistance.

(2) Document all episodes of airsickness in the comments section of the Aviation Training Form (ATF). The sortie shall be graded "complete" or "incomplete" per Multi-Service Pilot Training System (MPTS) or Multi-Service Navigator Training System (MNTS) guidelines.

(3) Complete Section A of the Airsickness Notification Form on all SNAs/SNFOs who experience airsickness after C4002 or after the second episode of airsickness and provide it to the student.

e. Flight Students Shall:

(1) Disclose all episodes of active and significant passive airsickness to the IP or Instructor Navigator (IN) for documentation purposes.

(2) Report for all scheduled training components of AMP. Participation in Phases II through V of the AMP is voluntary. However, failure to participate may call into question the student's motivation or ability and enhance the student's potential for attrition due to persistent airsickness.

(3) Maintain in "mini Aviation Training Jacket (ATJ)" copies of enclosures (1) and (2) of this instruction subsequent to any mandatory Flight Surgeons (FS) evaluation for airsickness.

05 JUL 2006

(4) Upon receipt of an IP/IN completed Airsickness Notification Form, report to the Student Control Office to update a "master" Airsickness Tracking Form to be maintained in the student's ATJ.

(5) Maintain current and accurate copies of Airsickness Tracking Form if airsick after C4002 or after the second episode of airsickness.

(6) Hand carry Airsickness Notification Form with Section A filled out by the IP/IN and a current copy of the Airsickness Tracking Form to medical for all required FS evaluations.

(7) Return the completed Airsickness Notification Form with FS comments and recommendations to the squadron for consideration prior to scheduling subsequent training events.

f. The AMSO shall: Assist in the conduct of the AMP, especially as it applies to physiologic adaptation including educational briefs, ART (spin chair training), and relaxation techniques. Of particular importance to this training is information gathering by the AMSO related to the identification and elimination of airsickness causal or aggravating factors.

g. Assigned Flight Surgeons shall:

(1) Provide initial and follow-up medical evaluations, treatment, counseling, and referral as required for students involved in the AMP.

(2) Coordinate implementation of all phases of the AMP.

(3) Provide feedback and airsickness management recommendations to the squadron utilizing Sections B and C of enclosure (1).

(4) Make appropriate Health Record (HR) entries on Enclosure (3).

(5) Participate in ARBs.

(6) Perform grounding physicals, when appropriate, on students determined to be Not Physically Qualified (NPQ) for aviation duty for reason of intractable airsickness.

05 JUL 2006

5. Airsickness Management Procedures for Student Pilot Training

a. PHASE 0: AIRSICKNESS AWARENESS BRIEF. Student aviators, prior to initial aerial training (T-34C/T-6A) shall receive an airsickness awareness brief to include the cause, prevention, management, safety implications, and potential training impact of airsickness on flight training. To assist in providing individual educational assistance, an "Airsickness Handout", enclosure (6), is provided to be utilized on an as needed basis.

b. PHASE I: FLIGHT SURGEON EVALUATION

(1) A FS evaluation is required after any student's second episode of airsickness or for each occurrence after the completion of C4002. Students who experience airsickness after C4002 shall consult a FS as soon as practical if the airsickness did not interfere with successful completion of the training mission. Students who experience severe symptoms i.e., incapacitation, incomplete sortie due to airsickness shall see the FS prior to being scheduled for a subsequent flying event. This evaluation shall be documented in the student's medical record, enclosure (3), by the flight surgeon. Students who require and receive this initial medical evaluation for airsickness shall be formally entered into the command's AMP. While participating in the AMP, students will continue normal syllabus flow to include flying unless otherwise prohibited by this instruction.

(2) The purpose of the FS evaluation is to determine if the student's symptoms are physiologic or due to other causes. The FS should ascertain if the airsickness preventative measures presented in Phase 0 were followed. Additionally, the FS should assess the members Aeronautical Adaptability (AA), motivation to fly, and special circumstances such as anxiety, stress, and other predisposing factors. Counseling or medical treatment may be indicated at this time.

(3) Referral of the student by the FS or AMSO for behavioral health counseling and/or training should be considered at any point during phases II through IV. Referral consideration should be based on severity of the airsickness problem and impact on quality of training and safety of flight. Other concerns include the individual needs and desires of the student and the availability of local resources to provide the training. Behavioral health training should include some or all of the following entities:

05 JUL 2006

- (a) Stress Management
- (b) Progressive Muscle Relaxation
- (c) Relaxation Breathing
- (d) Biofeedback

c. PHASE II: MEDICATION

(1) The FS shall evaluate students who experience their third episode of airsickness, or airsickness after C4002. During this visit consideration for medical suppression of airsickness symptoms should be considered. Medication is restricted to students flying in the pre-solo phase of T-34C/T-6A training. Students participating in training sorties who are medicated for airsickness shall communicate this intervention to their IP/IN utilizing the Airsickness Notification Form. Medication, if utilized, will be discontinued prior to C4201. In the case of SNFO training, medication will be discontinued prior to I-4004. Whenever practical, students should be dispensed an adequate supply of medication so that a ground test dose of the medication can be used prior to the next training sortie. Ground testing of medication effect will facilitate observation for idiosyncratic reactions, unacceptable side effects, or for the need to titrate medication dosage. For purposes of the medical management of airsickness symptoms the following medications should be utilized:

(a) Phenergan, 25 mg tablets, 1 tablet by mouth 1 hour before flying OR.

(b) Scopalamine 0.4 mg tablets, 1 tablet by mouth 1 hour before flying.

WARNING:

(2) Antiemetic agents listed above shall not be used as a sole agent in the treatment of airsickness in flight students. When ONE of the above medications is utilized for the prevention of the symptoms of airsickness, it shall be used (unless contraindicated) in conjunction with ONE of the following medications:

05 JUL 2006

(a) Ephedrine 25 mg tablets, 1 tablet by mouth 1 hour before flying OR

(b) Dextroamphetamine 5 mg tablets, 1 tablet by mouth 1 hour before flying

d. PHASE III: ADAPTATION FLIGHTS

(1) Students who experience airsickness after the use of medication, or after the point in time that medication is no longer authorized, shall be considered for adaptation flights. Adaptation flights shall consist of daily scheduling of syllabus events whenever possible on five consecutive training days. When syllabus events are not available, commanders should utilize any available resource to accomplish this phase of adaptation to include rear cockpit flight time in the T-34C/T6A form chase flights or flight time in other aircraft in a non-aircrew position. Adaptation flights involving non-syllabus events shall not be utilized as an opportunity for the student to improve flight or other aviation proficiency but rather to provide the student with additional exposure to the flight environment. Adaptation flights shall be documented on the Airsickness Tracking Form.

(2) The fundamental rationale for this phase of adaptation is that flying is the most effective remedy for airsickness. It is important that adaptation flights, if they result in student airsickness, not be utilized to the extent that an aversion to the flight environment is created for the student. Also, the use of adaptations flights shall not adversely diminish training resources or degrade the unit's overall training mission.

(3) A "favorable response" to adaptation flights is considered to be a subjective or objective decrease in the frequency and severity of active or passive airsickness symptoms. Students who do not demonstrate a favorable response to adaptation flights or in whom airsickness symptoms recur after adaptation flights have been conducted shall be referred to Phase IV AMP training. Students demonstrating a favorable response to adaptation flights will continue normal syllabus flow. Phase III training can be repeated or used in conjunction with other phases of AMP training, on an as needed basis, to facilitate adaptation.

e. PHASE IV: AIRCREW ROTATIONAL TRAINING. Students who demonstrate persistent or recurrent airsickness symptoms shall be referred to the FS for evaluation and considered for Aircrew

05 JUL 2006

Rotational Training. This is a three to four-day program intended to provide physiologic adaptation utilizing the Barany Chair. Students shall not be scheduled for training missions on the first two days of ART but can be scheduled to fly on the third or fourth days prior to spin chair training. Following the completion of ART, students should be offered the opportunity for remediation spin training on an "as needed" or "desired" basis, e.g., following extended periods of time out of the cockpit.

6. Airsickness Review Board. After a SNAs third episode of airsickness post initial solo or a SNFOs third episode post I5103 an ARB shall be convened to determine the student's fitness for retention. Alternatively, an ARB may be convened at any time by the Commanding Officer whenever a student experiences persistent, severe, or recurrent airsickness. The conduct, composition, and potential outcomes of the board are described in enclosure (5). If the student is returned to training and again experiences airsickness, the board will be reconvened not later than the third episode of airsickness post previous ARB to reconsider the matter. Returning a student to training after a second Aeromedical PRB requires Wing Commander concurrence.

7. Advanced Flight Students who Demonstrate Airsickness. Students in advanced phase of flight training shall be referred to the flight surgeon after each episode of airsickness to rule-out underlying medical etiologies of airsickness or to identify and correct predisposing causes. This flight surgeon evaluation shall be documented in the students' health record. Symptoms, in some cases may be attributable to the student's transition to a higher performance aircraft and in this case a reasonable period of adaptation is warranted. Use of airsickness medication is prohibited in advanced flight training. Utilization of adaptation modalities in Phases III and IV of the AMP should be considered for management of airsickness during this stage of training. After the third consecutive episode of airsickness or the fifth episode in any one phase of advanced flight training an Aeromedical PRB shall be convened to assess the student's potential for successful completion of the program as outline in enclosure (5).

8. Self-Paced Airsickness Desensitization (SPAD) is a motion sickness adaptation program available at the Naval Operational Medical Institute (NOMI) in Pensacola Florida designed to provide assistance and training for individuals attempting to overcome airsickness. This program shall not be considered part of the CNATRA Airsickness Management Program but may be

05 JUL 2006

considered for flight students on a case-by-case basis. This program is not and should not be considered an entitlement and referral for this training is strictly subject to Commanding Officer approval.

9. Disqualification for Airsickness. Student Aviators who cannot overcome airsickness problems shall be processed for attrition according to parent service or country directives. USN and USMC SNA and SNFO students who experience intractable airsickness are Not Physically Qualified (NPQ) for aviation duty. Undergraduate USAF pilot and navigator students who are unable to overcome airsickness shall be handled in accordance with AFI48-123. In no case will flight students be granted an airsickness medical waiver.



D. B. GRIMLAND
Chief of Staff

Distribution:
CNATRAINST 5215.1R
LIST I

Copy to:
NETC
COMTRAWING TWO (COOP file)

CNATRAINST 6410.2

05 JUL 2006

BLANK PAGE

<u>AIRSICKNESS NOTIFICATION FORM</u>	
SECTION A. INSTRUCTOR REPORT	DATE
Syllabus Event	
Previous Airsickness (Review Airsickness Tracking Sheet):	
Symptoms during flight:	
Instructor's name, phone:	
Flight Leader's name, phone:	
SECTION B. FLIGHT SURGEON COMMENTS	DATE
Flight Surgeon's Comments:	
SECTION C. Airsickness Management Recommendations:	
<input type="checkbox"/> Medication for next training sorties.	
<input type="checkbox"/> Adaptation flights (5 consecutive training days) within syllabus if possible. Note: schedule early a.m. if possible.	
<input type="checkbox"/> Referred to Aircrew Rotational Training (ART) Note: syllabus event can be scheduled on a.m. of 3 rd or 4 th day of training prior to ART	
<input type="checkbox"/> Refer to Airsickness Review Board	
<input type="checkbox"/> Other	
Student's Name/Squadron:	
Flight Surgeon's Name/stamp:	

CNATRAINST 6410.2

05 JUL 2006

BLANK PAGE

CNATRAINST 6410.2

05 JUL 2006

BLANK PAGE

05 JUL 2006

MEDICAL RECORD	CHRONOLOGICAL RECORD OF MEDICAL CARE
DATE	SYMPTOMS, DIAGNOSIS, TREATMENT, TREATING ORGANIZATION <i>(Sign each entry)</i>

Subjective:

Vital Signs, PMHx, Meds, and airsickness tracking sheet (If applicable) reviewed Y / N

Physical exam

HEENT:

TM:

Neuro:

Cranial nerves:

DTR's:

Strength/Sensation:

Gait:

Cerebellar function:

Rapid alternating movements:

Heel-shine-toe:

Finger to nose:

Romberg:

Tandem Romberg:

A: Airsickness evaluation #

P: Give patient airsickness handout, reassure, review diaphragmatic breathing, relaxation techniques, and diet.

Medication

Phenergan 25mg PO 1 h before flying (#) _____

Ephedrine 25mg PO 1 h before flying (#) _____

Dexadrine 5mg PO 1 h before flying (#) _____

Scopolamine 0.4mg 1 h before flying (#) _____

Adaptation flights:

Aircrew Rotational Training; INITIAL REMEDIAL

Referral to Airsickness Review Board

Follow up with flight surgeon for each episode of airsickness

Other:

-2-

HOSPITAL OR MEDICAL FACILITY	STATUS	DEPART./SERVICE	RECORDS MAINTAINED AT
SPONSOR'S NAME	SSN/ID NO.	RELATIONSHIP TO SPONSOR	
PATIENT'S IDENTIFICATION: <i>(For typed or written entries, give: Name - last, first, middle; ID No or SSN; Sex; ;Date of Birth; Rank/Grade.)</i>		REGISTER NO.	WARD NO.

CHRONOLOGICAL RECORD OF MEDICAL CARE
 Medical Record
STANDARD FORM 600 (REV. 6-97)
 Prescribed by GSA/ICMR
 FIRMR (41 CFR) 201-9.202-1

05 JUL 2006

AIRCREW ROTATIONAL TRAINING PROCEDURES1. Program Overview:

Aircrew Rotational Training (ART) is a three-day program designed to help students overcome susceptibility to airsickness. Each day of training helps the student identify factors in airsickness, allows development of control measures while building confidence in student's ability to overcome or control airsickness. Students can be referred to an aircrew rotational instructor by the flight surgeon per this instruction.

2. Aircrew Rotational Training:

a. Introduction. This is a three-day program with each training session lasting one to three hours. Each day the program focuses on a different aspect of controlling airsickness. Students participating in this program shall not fly after spinning in the chair. All student flights for any given crew day must be completed prior to spinning. This enclosure contains several tables to be used as follows:

- Table 1, Physiology Questionnaire. Student completes during Check in with squadron flight surgeon.
- Table 2, Subjective Airsickness Rating Chart. Used to record student's response to duration and stimulus from ART.
- Table 3, ART Checklist. Used for standardization in completing all aspects of ART.
- Table 4, Airsickness Prevention Techniques. Explanation of terms and techniques used to control airsickness.
- Table 5, ART Log. Tracking sheet for students participating in ART.
- Table 6, Student ART Tracking Data. Tracking sheet used to provide data on success rate of ART and application toward Winging.

b. Aircrew Rotational Training Instructors. Fight Surgeons, Aviation Medicine Technicians or Aviation Physiologists perform the duties of ART instructors. As an ART instructor always try to place the student at ease as you talk through the ART. The goal is to return students to the squadron with the skills to overcome airsickness.

05 JUL 2006

Table 1

Physiology Questionnaire

Name: _____ Date: _____

Aircraft: T-34 T-6 T-1 T-39 T-45 TH-57

Phase of training: Contact Instruments Navigation Formation

Total number of training flights: _____

Total number of flights on which airsickness occurred: _____

Is airsickness generally: active or passive (circle one)

Symptoms occur during the sortie: early mid late

Circumstances under which airsickness occurs:

High G's / Negative G's / Release from G's

Turbulence / Fumes / Hot environment i.e., inadequate or no AC

Acrobatics / Visual stimuli i.e., moving horizon

Time of day of sortie / Fear / Anxiety / Stress

Affected by food (if so what kind)

Empty stomach Y / N Time interval between eating and flying

Chronic GI symptoms _____

Recent illness / symptoms _____

IP flying versus student flying

Symptoms Experienced:

Body temperature: hot cold

Dizziness (spinning) versus lightheadedness

Drowsiness / yawning

Headache / Nausea

Pallor Hyperventilation Anxiety Panic Malaise

Salivation or dry mouth Fatigue Confusion

Sweating: hot cold

Weakness

Vomiting

Other _____

Efforts to cope so far

Effective Partially Effective Ineffective

Time needed to recover from airsickness:

Hours: _____ Minutes: _____

Change in severity over time:

better _____ worse _____ unchanged _____

Variation in susceptibility without apparent cause:

Yes _____ No _____

Motivation to fly: (High Med Low)

Why _____

How long _____ Changed _____

Anxiety as a contributor

 Anticipatory

 Reaction to symptom onset

 Concerns about flying career

 Fear of flying versus fear of failure

Childhood history of motion sickness Y/N

Problems with:

Academics

Flying (other than airsick)

Other Stressors:

Physical Health/Fitness:

Sleep _____ Appetite _____ Exercise _____

Tobacco _____ Alcohol _____

How relaxes _____

Previous Mental Health Problems: _____

05 JUL 2006

Current Status (Student's subjective self assessment)

Mood/Aff

Confidence

Motivation

Attention

Concentration

Interest/ple in aviation

Energy level

Agitation

Lethargy

Helpless/hopeless/guilty

Sleep (duration/quality/disturbance)

05 JUL 2006

Table 2

SUBJECTIVE AIRSICKNESS RATING CHART

Name/Rank:	Service:	Date:
Phase:	Recall#:	Day:

Spin One

Minutes Elapsed	Level at End of Minute										Head Movement at End of Minute									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
2	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
3	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
5	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
6	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
7	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
8	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
9	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10

Spin Two

Minutes Elapsed	Level at End of Minute										Head Movement at End of Minute									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
2	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
3	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
5	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
6	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
7	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
8	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
9	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10

Spin Three

Minutes Elapsed	Level at End of Minute										Head Movement at End of Minute									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
2	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
3	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
5	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
6	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
7	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
8	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
9	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10

CNATRAINST 6410.2
05 JUL 2006

BLANK PAGE

05 JUL 2006

Table 3

AIRCREW ROTATIONAL TRAINING CHECKLIST

1. Introduce the Program to the student. ART is a three-day program with each day lasting 1-3 hours. Each day of the program focuses on a different aspect of controlling airsickness. Day 1 allows the student to determine different factors influencing their susceptibility to airsickness. It also gives them the chance to practice mechanical methods of reducing airsickness (see Table 4). Day 2 focuses on techniques used to relax the body. Day 3 is the confidence builder. It is used to enforce the student's perception that he/she have overcome the obstacle of airsickness. Emphasize that we want them to succeed and care; he/she will succeed.

1.1. Interview. Have student sign in the ART Log (Table 5). Use the Physiology Questionnaire (Table 1) to review the student's history. Review the following with the student.

- How he/she handles stress?
- Married, children?
- Eating habits
- How many and under what conditions has he become sick in the past?
- What does he/she normally do to prevent airsickness?
- Relationship with IPs (any problems?)
- How has the student handled the stress?
- Does he/she still work out?
- Has student always wanted to fly? Does he/she feel pressure from family and friends?
- How does he relax?

NOTE: If you think that there may be excessive mental anxiety involved in getting airsick, call the flight surgeon to schedule stress management training and/or biofeedback training.

1.2. Introduce Prevention of Airsickness.

a. Airsickness Control Demonstration. Teach the student the:

- (1) Breathing Techniques
- (2) Muscle Tensing Exercise

05 JUL 2006

(3) Autogenic and Imagery Skills

Then have student demonstrate the techniques that were discussed.

b. Diet.

- Diet can affect one's susceptibility to airsickness. Issues are, whether to eat before flying and what you eat. Generally, it is advisable not to fly on an empty stomach. Individual variability exists among aviators and often trial and error will result in success.
- High carbohydrate foods (e.g., bagels) are well tolerated by airsickness prone aviators. Do not overeat before flying and avoid alcohol the evening prior. Eat 1-3 hours prior to flying.
- Avoid meat, dairy products, fruits and vegetables with high acid content (e.g., oranges and tomatoes), and foods that are greasy or spicy. Maintain good hydration with plenty of water.

c. In the aircraft.

- Lead with the eyes (during head movements/clearing turns).
- Slow, deep diaphragmatic breathing; breathe in through nose and out through mouth; or all through nose.
- Look at static object to orient yourself: horizon, instruments.
- Use of 100% oxygen has been helpful in some individuals in prevention of airsickness. Extreme caution must be utilized in the prevention of emesis with O₂ mask in place.
- Position air vents towards you with cold air.
- Muscle tension/relaxation
- Imagery ("happy place" or review flight profile and next checklist)

- Incorporate relaxation techniques in chair-flying (esp. right before a maneuver that commonly makes the student airsick)

WARNING

Students participating in this program are not allowed to fly after spinning in the chair. All flying for the day must be completed prior to spinning.

2. Student's Responsibility.

- Listen to the Muscle Tensing Exercise tape (optional).
- Practice the relaxation techniques.
- Attend the scheduled training sessions at the designated training lab each of the three successive days.

3. Supplies.

- Barany chair
- Helmet with visor cover (student must bring)
- Watch or clock with a second hand
- Sign-in Log - Aircrew Rotational Training Log
- Individual ART Folder
 - 1) Copy or Original referral by Flight Surgeon
 - 2) Student Rotational Training Questionnaire (Table 1)
 - 3) Subjective Airsickness Rating Chart (Table 2)
 - 4) Aircrew Rotational Checklist (Table 3)
- Air Sickness Prevention Techniques (Table 4)
- Aircrew Rotational Log (Table 5)
- Student ART Tracking Data Program Chart (Table 6)
- Motion sickness bags
- Pencils

05 JUL 2006

4. Subjective Airsickness Rating Chart. The chart (table 2) is used to graph the student's response to duration and stimulus. It allows the student to categorize their level of discomfort to their ability to fly the plane.

- Number 1 through 4 indicates low arousal not interfering with flight.
- Number 5 through 7 indicates medium arousal that would cause the trainee to deviate from planned flight, causing the student to transfer flight control to the IP.
- Numbers 8 and 9 indicates a high level of arousal.
- Number 10 is marked if the student becomes actively sick.

5. Day One Protocol (Diagnostic Phase). The primary objective for day one is to get to know the student, the history of their problem, and observe the student's reaction to extensive rotation. ART instructor should be observant for personal behavioral patterns and physiological/psychological symptoms in relation to airsickness. Have the student fill in the information required in the Aircrew Rotational Training Log (Table 5).

IMPORTANT

The following are only guidelines. The ride may be tailored to the individual student (i.e. stopping the ride if the student starts feeling sick).

5.1. Day 1, Ride 1. During this spin, the intent is to assess the student's susceptibility to motion without visual inputs and establish a baseline. This will allow the student to experience the symptoms prior to emesis. For example, inform the student that he or she is pale, sweating, flushed, etc., so he or she has a more intimate knowledge of what is happening to his or her body just prior to emesis. Review subjective scale of airsickness:

- 1-3: mild test anxiety (sweaty palms)
- 4: Straight and level flight
- 5-6: Building nausea
- 7: Must give control of aircraft to IP
- 8-9: Leading up to active emesis
- 10: Active emesis

IMPORTANT

Prior to spinning, have student open airsickness bag and place it in flightsuit pocket, so the bag can easily be reached and used if needed.

- Student is spun with earplugs and blindfold (optional).
- Spin rate is one revolution every 2-3 seconds (20 rpm).
- Spin direction is any direction.
- Spin for about ten (10) minutes. If the student feels sick, stop the spin.
- Make a note of any outward (objective) symptoms that you observe (gripping the armrest hard, sweating, retching or gagging noises, paleness, etc.).
- Periodically record on the Subjective Airsickness Rating Chart (Table 2), the level of discomfort.
- The student can perform a few maneuvers or head movements during this ride, to raise arousal levels.
- Practice any techniques he/she currently uses for motion sickness.
- Upon completion of ride 1, discuss with the student their subjective symptoms and any outward (objective) symptoms you observed.
- Give the student a ten-minute break before the 2nd Spin.

5.2. Day 1, Ride 2: Before spinning, review techniques to combat airsickness; emphasize the goal to keep airsickness below level 7 at all times. Teach aggressive deep diaphragmatic breathing (see table 4) and have them demonstrate proficiency before spin:

- Short breath through nose to fill
- Pause after inhaling 1-2 seconds
- Slow exhalation through mouth ("like blowing through a straw")

05 JUL 2006

- Make sure to blow out all air and squeeze stomach in the process
- A good set is 3-4 breaths; use sparingly ("Quality of breathing, not quantity, is what matters")
 - Prior to second spin discuss and practice with the student the focal point and clearing turns (table 4).
 - Correlate level of airsickness to techniques used:
- 1-3: 100% oxygen, slow deep diaphragmatic breathing
- 4-5: Imagery ("happy place" such as a favorite picture or envision performing next maneuver or checklist), muscle tension/relaxation ("drop-offs")
- 6: Aggressive deep diaphragmatic breathing
 - Student is spun with eyes open, and wandering for first minutes, then fixation on a focal point.
 - Spin rate is one revolution every 2-3 seconds.
 - Spin direction is opposite to that of spin 1.
 - Spin for approximately ten (10) minutes.
 - Make a note of any outward (objective) symptoms that you observe (intensely gripping the armrest, sweating, retching or gagging noises, paleness, etc.).
 - Record on the Aircrew Rotational Spin Chart (Table 2), the level of discomfort at every minute and the maneuvers the student performs.
 - Try not to make student become "active."
 - The student performs different types of maneuvers during this ride. Instruct the student to make sure to use a **continuous motion** when doing the maneuvers.
 - Loops:** Student leans forward and touches forehead to the front rail pad. After he/she stabilizes (about 30 seconds) have student return to the up-right sitting position.

- Clearing Turns:** Head should be upright and student turns his/her head right and left.
- Aileron Rolls:** Student leans right or left from the vertical position. After he/she stabilizes (about 30 seconds) have student return to the up-right sitting position.
- After completing ride 2, discuss with the student his/her subjective symptoms and any outward (objective) symptoms you observed.
- Discuss proper breathing, eye fixation to limit motion input, and the drop-off maneuver to combat airsickness.
- Give the student enough time to recover from the spin before letting him/her out of the chair.
- Remind student that he/she may sign-out a relaxation DVD at any time (Table 5).
- Preview day two and set an appointment time with the student.

5.3. Day 1, Ride 3: (Optional)

- Repeat spin #2 and perfect techniques.

After spin, tell student to practice aggressive diaphragmatic breathing at night and incorporate it into chair flying.

6. Day Two Protocol. The student gets at least two ten-minute spins in the chair. The primary objective of day two is to reinforce the student's understanding of symptoms that precede uncontrollable airsickness.

- Practice deep diaphragmatic breathing.
- Practice "Drop-Off" maneuver technique.
- Practice progressive muscle relaxation.
- Require the student to control their arousal level.
- Student is spun without a helmet, eyes closed.
- Spin rate is one revolution every 2-3 seconds.

05 JUL 2006

- Alternate direction of spins.
- Spin for approximately ten minutes.
- Make a note of any outward (objective) symptoms that you observe (gripping the arm rest hard, sweating, retching or gagging noises, paleness, etc.).
- Talk the student through the Muscle Tensing exercise.
- Discuss proper breathing techniques.
- Eye fixation to limit motion input.
- Drop-off maneuver.
- Progressive muscle relaxation technique.
- After completion of the spin, discuss with the student his/her subjective symptoms and any outward (objective) symptoms you observed.
- Give the student enough time to recover from the spin before letting out of chair.
- Give the student a break before you begin the next spin session.
- Repeat the previous steps for the subsequent spins.
- Preview day three and set an appointment time with the student.

7. Day Three Protocol. Repeat Day 2 procedures. The primary objective of day three is to build that final bit of confidence in the student.

- Review progress and relaxation techniques with student.
- Get feedback from student on his/her confidence level.
- Offer further ART training as needed (refresher spins).

Table 4

AIR SICKNESS PREVENTION TECHNIQUES

1. **Diaphragmatic Breathing** refers to a rhythmic, diaphragmatic method of breathing that serves to relax an individual by reducing sympathetic response of the autonomic nervous system. The theory behind structured breathing is that the body cannot be at once both tense and relaxed, and by diaphragmatic breathing, the tension and subsequent sympathetic response can be overridden or at least minimized and controlled. To effectively employ the technique of structured breathing one takes in a sharp, moderately deep nasal inhalation, hold the breath for two to three seconds, and expels the air orally (the exhalation should take four to five times longer than the inhalation; exhale past the point of normal exhalation and contract the stomach). If the symptoms of hyperventilation occur the inhalation is too shallow and greater care is taken to ensure a normal respiratory rate is maintained (12-16 times per minute). Structured breathing should be employed in anticipation of any adverse arousal situation (motion caused by the aircraft, Barany chair, etc.) and may be continued as long as the adverse arousal conditions persist.

2. **The Drop-off Maneuver** is the term used to describe a compressed form of progressive muscle relaxation combined with diaphragmatic breathing. To accomplish a drop-off, the student simultaneously tenses all skeletal muscles for a period of five to ten seconds followed by a rapid relaxation of those same muscles. The tensing and relaxing of skeletal muscles results in a corresponding tensing and relaxing of the involuntary muscles. A drop-off is thought to result in decreased sympathetic arousal. The drop-off can be practiced in more exaggerated maneuver. The drop-off during actual flying should be modified to each individual preference so that a student can achieve relaxation. For example, some people are able to relax more by just wiggling their toes or doing a "G"-straining maneuver. Other people may find that taking a deep breath and breathing out explosively (like a person who does judo other martial arts) relaxes them. The ultimate goal is to have the student achieve voluntary control over physiological responses.

3. **Eye Fixation** is used mainly in aircraft spin situations. The student should fix his/her eyes on a "friendly" instrument (some instruments such as the altimeter or VVI can contribute to motion sickness) that will help reduce motion input into his/her

05 JUL 2006

eyes. The student then moves his/her eyes around to the other instruments and the outside in quick back and forth movements and try to keep all head movement to a minimum. In the Barany chair the student should "fix" his/her eyes on the front rail padding and practice moving the eyes (but not the head) to different items in the room and then back to the front rail padding. If the student has to move their head (i.e. clearing turn) first move the eyes in the required direction and then follow in a slow steady manner with the head.

CNATRAINST 6410.2
0 5 JUL 2006

BLANK PAGE

Enclosure (4)

18

CNATRAINST 6410.2
05 JUL 2006

BLANK PAGE

AIRSICKNESS REVIEW BOARD (ARB)

1. Definition: An ARB is a special Training Review Board convened to assess a student pilot or navigator's potential for successful completion of the flight training syllabus in light of significant airsickness problems and to make a recommendation to the commanding officer regarding attrition or retention for persistent airsickness.

2. Convening Authority: Commanding Officer

3. When ARB shall be convened:

a. After a SNAs third episode of active or passive airsickness post initial solo.

b. After a SNFOs third episode post I5103.

c. When a student fails to demonstrate an "adaptive pattern" to the flight environment i.e., no demonstrated incremental subjective and object decrease in the frequency or severity of airsickness symptoms during participation in any two Phases of the Airsickness Management Program (AMP).

d. After the third episode of active or passive airsickness post prior ARB.

e. After recurrent or persistent airsickness symptoms are recognized in a student in advanced flight training defined as 3 consecutive episodes of airsickness on successive training sorties or 5 episodes in any one phase of training.

f. Whenever the Commanding Officer deems necessary.

4. Composition of the Board:

The board shall consist of 2 or 4 instructors of the same training unit and a FS. The senior line officer shall preside as Senior Member of the Board and be senior in rank to the student who is the subject of the board. The Senior Member of the Board shall be responsible for conduct of all board proceedings. At least 1 member of the board shall be of the same military service as the student. In the case an International Military Student (IMS) the Country Liaison Officer (CLO), if one is assigned, and/or the unit International

05 JUL 2006

Military Student Officer (IMSO) should attend as a non-voting board member. Potential members include the student's on-wing, flight leader, personal advisor, or other instructor familiar with the case.

5. Charter of the Board: Evaluate the students potential for successful completion of the program in light of the current airsickness problem. Issues to consider include:

- a. Presence or absence of physical or psychological impediments
- b. Motivation
- c. Flight proficiency (airwork)
- d. Intellectual ability (headwork)
- e. Special circumstances eg., stress, anxiety, study habits, history of motion sickness
- f. Human Factors
- g. Safety of flight
- h. Frequency and Severity of present airsickness symptoms
- i. Were applicable airsickness guidelines followed in accordance with this instruction?

6. Potential Recommendations to unit CO based on majority vote:

- a. Attrition for persistent airsickness
- b. Retention
- c. Retention with limitations or specifications

7. Attrition: Attrition from flight training for reason of airsickness shall be handled in accordance with the medical or administrative directives of the parent service or country.

AIRSICKNESS HANDOUT

WHAT IS AIRSICKNESS?

Airsickness is a form of motion sickness where an abnormal physiologic state is experienced with some or all of the signs and symptoms of stomach awareness, lethargy, apathy, yawning, nausea, pallor, sweating, generalized malaise, drowsiness, headache, hyperventilation, salivation, and vomiting. Airsickness is a common problem encountered in aviation training and may affect nearly forty percent of students to some degree. Airsickness is a normal response to abnormal motion.

WHAT CAUSES AIRSICKNESS?

Many factors are involved in airsickness and several of these will be addressed below. The most significant factor associated with airsickness is lack of adaptation to the flying environment. Conflicting sensory input between the visual and vestibular systems is the most likely explanation regarding the origin of airsickness.

HOW IS AIRSICKNESS PREVENTED AND TREATED?

PRE-FLIGHT PREVENTION

Close observation to factors which influence airsickness:

Diet and Hydration - Conflicting data exists on whether eating and drinking affect the risk of developing motion sickness. Until you determine what works (or doesn't work) for you, **avoid**: greasy, spicy, fatty foods, acidic foods (e.g., orange, tomato, or grapefruit), excess caffeine and carbonated drinks before flying. Dairy products and meat are not tolerated well by some individuals. Eating a bland meal with adequate carbohydrates 1-3 hours before flying is generally considered advisable. Maintain proper hydration with juice, water, or a sports drink. Take and consume water on training flights.

- **Rest** - 6-8 hours of peaceful sleep is recommended on the night prior to a training flight. Adequate rest improves tolerance to Gs, heat, and psychological stress.
- **Anxiety** - Proper preflight preparation with studying and chair flying (ideal with helmet and mask) will help decrease the anxiety associated with learning a new skill. Practice diaphragmatic breathing (see below) *before* you go to the

05 JUL 2006

flight line. Maintain a positive mental attitude. Airsickness will usually abate with continued flying. Flying will almost always cure airsickness.

- **Physical Health** - Illness, injury, or stress of any kind can lower your airsickness threshold.

IN-FLIGHT MANAGEMENT

- Direct cold air vents towards your face and neck.
- Ask for control of the aircraft. Otherwise, after asking the IP's permission, keep your fingertips on the stick when the IP has control.
- Be careful of rapid head movements. With turns, first move your eyes to the point, then follow with your head. Keep your Situational Awareness (SA), and don't be caught surprised.
- Keep your eyes on the horizon when you can and use a ground reference in turns.
- Perform deep diaphragmatic breathing when airsickness symptoms begin.

DIAPHRAGMATIC BREATHING

1. Assume a comfortable position.
 2. Close your mouth and inhale slowly through your nose. Your abdomen should expand more than your chest. This helps to prevent air swallowing and hyperventilation and to pass gastric contents down stream.
 3. Slowly exhale through your mouth. Puckering your lips helps to control the escape of air.
 4. Continue at a slow, comfortable pace. Resume normal breathing once your airsickness symptoms have been controlled.
- Although learning is impaired with airsickness, continue the sortie if possible. This gives additional exposure to the flying environment and will, in most cases, hasten the resolution of airsickness symptoms. Actively resist the urge to vomit.

POST-FLIGHT MANAGEMENT

A visit to the flight surgeon is required after the second episode of airsickness and on each occasion thereafter for the duration of primary flight training. There are several resources available to prevent airsickness. Medications, relaxation techniques, adaptation flights, and the Barany chair are helpful adjuncts in overcoming symptoms of airsickness and may be used by the flight surgeon.

Ginger (e.g., ginger root tablets) may help prevent airsickness and is associated with no adverse medical side effects. Recommended dosage is 1 - 2 grams prior to flying.

The best treatment of airsickness, and the goal of our program, is to keep you flying.

