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FREQUENCY AGILE LASER EYE PROTECTION: TECHNOLOGIES VS PERFORMANCE. J. B. Sheehy*. Naval Air Development Center, Warminster, PA 18974.

INTRODUCTION. With the introduction of military laser systems fixed wavelength laser eye protection became a high priority for both the aviator and soldier. Initially the number of wavelengths one might encounter were few and the optical density required to protect the human eye was low. As technology progressed the number of potential wavelengths and the power output of the various laser systems increased to the point where it is extremely difficult to provide protection against all possible wavelengths while ensuring adequate visual performance. With the advent of frequency agile lasers the approaches used in the past are no longer appropriate and new, dynamic forms of laser eye protection are required. Presently all the services are developing various forms of potential agile eye protection. In general, in order for the protection to be effective it must: 1) respond throughout the visible spectrum (400 to 700 nm, outside of the visible can be blocked with fixed filters), 2) activate at .5 uJ/square centimeter, 3) respond in less than a nanosecond (10E-9 sec), 4) relax after cessation of radiation, and ideally 5) become opaque at only the incident wavelength. Presently there are no perfect solutions, however, there are a number of viable non linear candidate materials such as liquid crystals, carbon suspensions, organometallics, thermally induced shifts in refractive index, and sacrificial films under investigation. The advantages, limitations, and the manner in which these technologies must be quantified will be discussed.

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ARTIFICIAL GRAVITY: HOW MUCH, HOW OFTEN, HOW LONG? R. Burton* and J. Vernikos*, Armstrong Laboratory, Brooks Air Force Base, TX 78235 and NASA-Ames Research Center, Moffett Field, CA 94035.

The argument is not overwhelming for the need to provide a continuous 1G environment using tethers or other means of spinning a spacecraft in order to maintain crew health in planetary exploration. Even on earth, we spend a maximum of 16-hrs in 1Gz (upright). Sporadic evidence over the years has suggested that somewhere between 30-min and 4-hrs of 1Gz may suffice to prevent the deconditioning effects of bedrest (orthostatic intolerance and the rise in calcium excretion). However, it is not known what the minimum requirements are, whether they vary for different physiological systems and whether passive Gz or the enhancement of the effects of activity conducted in an increased G field are more effective. It is similarly not known what the optimal duration and frequency of the G stimulus is, and how time of day might alter its effectiveness. Since acceleration level and duration appear to be physiologically interactive, it seems feasible to hypothesize that periodic acceleration exposures to greater than 1Gz levels provided by some on-board centrifuge, would suffice and should be explored.

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THE EFFECT OF INTERMITTENT STANDING OR WALKING DURING HEAD DOWN TILT BEDREST ON PEAK O₂ CONSUMPTION. A. C. Ertl, A. S. Dearborn, & J. Vernikos*. Life Sciences Division, NASA/Ames Research Center, Moffett Field, CA 94035.

INTRODUCTION. The cardiovascular aspect of bedrest deconditioning is manifest by decreases in peak O₂ uptake (VO_{2peak}) during maximal exercise. The effect of intermittent standing (+G_z) or walking (+G_zW) during 4 days of -6° head down tilt bedrest (HDT) on VO_{2peak} was evaluated. **METHODS.** Five protocols were performed by eight male subjects; control (C) consisting of complete bedrest, and 15-min periods to total 2 or 4 hours daily of standing (+G_z2 and +G_z4, respectively) or walking at 3.0 MPH (+G_zW2 and +G_zW4, respectively). Subjects performed VO_{2peak} tests prior to and on the final day of HDT. VO_{2peak} was determined using open circuit indirect calorimetry during supine leg cycling ergometry. After a 5-min warmup, three 2-min incremental loads of 33 W previously determined to elicit VO_{2peak} were given and the subject cycled to volitional fatigue. **RESULTS.** The C protocol VO_{2peak} decreased by 16% (2.71±0.16 to 2.27±0.14 L/min). VO_{2peak} decreased by 12% in +G_z2 (2.65±0.14 to 2.33±0.11 L/min) and 11% in +G_z4 (2.72±0.15 to 2.43±0.14 L/min). With +G_zW2, VO_{2peak} decreased by 9% (2.71±0.17 to 2.46±0.14 L/min) and with +G_zW4, VO_{2peak} decreased by 10% (2.71±0.14 to 2.43±0.14 L/min). VO_{2peak} in all protocols decreased with HDT (P<0.05). The decrease in C VO_{2peak} was significantly greater (P<0.05) than the decreases in either +G_z or +G_zW protocols. **CONCLUSION.** The deconditioning that occurs after only 4 days of HDT was demonstrated by decreases in VO_{2peak}. Intermittent +G_z or +G_zW attenuated, but did not prevent, the decrease in VO_{2peak} with HDT.

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PERIODIC UPRIGHT POSTURE NEGATES THE SUPPRESSION OF NEUROENDOCRINE RESPONSE TO HEAD DOWN BEDREST. C. E. Wade*, J. Vernikos*, J. Evans, and D. O'Hara. Life Science Division, NASA/Ames Research Center, Moffett Field, CA 94035.

INTRODUCTION. Head down bedrest (HDT) decreases plasma neurohormone levels, attaining a nadir within four hours. The present study evaluates the effect of periodic standing or exercise (+G_z) on this acute suppression of plasma neurohormones. **METHODS.** Nine male subjects (mean±SE age 37±2 yr; height 182±2 cm; weight 83±3 kg) were admitted to the Human Research Facility on three occasions separated by one month. Subjects were assigned to head down tilt (-6°) or 15-minutes of standing or moderate exercise at the end of each hour. Initially, during an ambulatory period, subjects were placed in a supine position for 45-min and a control blood sample obtained. The next day following 4-hours of HDT with or without standing or exercise a blood sample was taken 45-min (3 3/4 hours into HDT) after the preceding stand or exercise. Blood was withdrawn and all plasma samples frozen for determination of neurohormone levels within the same assay. Plasma aldosterone, plasma renin activity (PRA), vasopressin (AVP), and cortisol levels were measured by radioimmunoassay. Norepinephrine (NE) and epinephrine (E) levels were measured by electrochemical detection following HPLC. Values were compared by ANOVA, P<0.05. **RESULTS.** Control levels following 45-min supine were not different between treatments. HDT suppressed plasma aldosterone (13.9±3.7 to 6.6±0.7 ng/dl) and NE levels (299±35 to 217±23 pg/ml). Plasma vasopressin (1.1±0.2 to 1.1±0.2 pg/ml), cortisol (11.1±1.4 to 9.3±0.7 µg/dl), E (69±15 to 65±21 pg/ml), and PRA (0.64±0.13 to 0.58±0.17 ngAl/ml/hr) were not significantly altered. Standing or exercise negated the decrease in aldosterone and NE levels due to HDT. **CONCLUSIONS.** Periodic upright posture (+G_z) with or without exercise for 15-min out of each hour negates the acute suppression of aldosterone and NE associated with HDT.

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THE EFFICACY OF PERIODIC +1Gz EXPOSURE IN THE PREVENTION OF BEDREST INDUCED ORTHOSTATIC INTOLERANCE D.A. Ludwig, J. Vernikos, M.R. Duvoisin & J.L. Stinn. Dept. of Math, Univ. of NC, Greensboro, NC 27412, Life Science Division, NASA-Ames Research Center, Moffett Field, CA 94035 and Biomedical Operations and Research Office, NASA-KSC, Kennedy Space Center, FL 32899.

INTRODUCTION. What is the most efficient dosage of periodic exposure to +1Gz during microgravity to maintain a functional upright posture after returning to a +1Gz environment? The answer has implications for the type of countermeasures astronauts will be required to perform during long term space flight. **METHODS.** Nine males were subjected to four different +1Gz exposure protocols plus a control protocol ("0Gz") during four days of continuous bedrest. The four +1Gz exposures consisted of periodic standing or walking each for a total period of two or four hours. Each subject was returned for bedrest on five different occasions over a period of approximately one year to obtain data on each of the nine subjects across all four +1Gz treatments and the control. A 30min tilt test was used to measure orthostatic response during pre and post bedrest. **RESULTS.** In terms of survival rate (percent of subjects who did not faint after 30sec of tilt), 4 hours of intermittent standing was the only protocol that maintained a rate comparable to pre bedrest levels (87.5%). Although the other three +1Gz protocols performed better than the "0Gz" control (22.2%), only the four hour standing returned post bedrest survival rates to pre bedrest levels. **CONCLUSIONS.** The results will need to be evaluated with regards to a variety of other physiological systems which are known to decondition during microgravity.

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THE VALUE OF THE 4-DAY HEADDOWN BEDREST MODEL FOR SCREENING COUNTERMEASURES. J. Vernikos*, L. Keil, A. C. Ertl, C. E. Wade*, J. E. Greenleaf*, D. O'Hara, and D. Ludwig*. NASA/Ames Research Center, Moffett Field, CA 94035 and University of North Carolina at Greensboro, Greensboro, NC 27403.

In order to evaluate the benefits of periodic exposure to the +Gz vector as a countermeasure to the physiological responses to -6° head-down bedrest (HDT), we considered a two-tiered approach: (a) to use 4-days HDT as a quick and inexpensive means of screening countermeasures, (b) to use a 60 day HDT to validate the most promising candidates. The approach and results of a 4-day study are described here. **Methods:** Nine males were admitted to our Human Research Facility for one ambulatory control day followed by 4-days HDT and were released on the next day after completion of a peak oxygen consumption test (VO_{2peak}). A battery of tests was selected and standardized to evaluate the known early effects of HDT on plasma volume, early bone markers, orthostatic tolerance, physical performance, and fluid and electrolytes and their hormone regulation. Fluid, sodium (Na) and potassium (K) intake and output in the urine were monitored throughout. Plasma volume was determined with a modified Evans Blue method and orthostatic tolerance with a 60° head-up tilt test for 30 minutes—both of which were determined on the ambulatory control day and on day 4 of HDT. Immediately after completion of the tilt test, subjects were returned to the -6° position until the next morning when a VO_{2peak} (horizontal bicycle ergometer) was done. This was compared to a similar control test determined on 2 separate occasions before subject admission. **Results:** Four hours after going HDT produced significant decreases (p<0.05) in the circulating concentration of fluid and electrolyte regulating hormones. Plasma volume, orthostatic tolerance and VO_{2peak} changed significantly after 4-days HDT. There was also the expected natriuresis on day 1 of HDT but no significant diuresis. The consistency of the pre-bedrest VO_{2peak} tilt tests and plasma volumes was remarkable. **Conclusions:** The 4-day HDT model seems highly promising for screening a variety of countermeasures alone and in combination before validating their benefits in extended bedrest or flight experiments.

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(with abstract numbers)

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REGISTRATION FEES (DUES NOT INCLUDED)

MEMBER and AMA Cat I CME Credits	@ \$160.00	\$ _____
MEMBER and No Credits	@ \$110.00	\$ _____
NON-MEMBER and AMA Cat I CME Credits	@ \$245.00	\$ _____
NON-MEMBER and No Credits	@ \$195.00	\$ _____
STUDENTS (with valid ID Card)	No Charge	

(Non-Members are welcome at meal functions)

Sun., May 10 AsMA Welcome (cash bar)	No. _____		No charge
Mon., May 11 Civil Aviation Medical Association Luncheon	No. _____	@ \$ 20.00	\$ _____
Mon., May 11 Society of U.S. Air Force Flight Surgeons Luncheon	No. _____	@ \$ 20.00	\$ _____
Mon., May 11 U.S. Navy Luncheon	No. _____	@ \$ 20.00	\$ _____
Mon., May 11 U.S. Army Aviation Medical Association Luncheon	No. _____	@ \$ 20.00	\$ _____
Mon., May 11 Aerospace Human Factors Association Luncheon	No. _____	@ \$ 20.00	\$ _____
Mon., May 11 Flight Nurse Reception	No. _____	@ \$ 10.00	\$ _____
Mon., May 11 Associate Fellows Reception	No. _____	@ \$ 10.00	\$ _____
Tues., May 12 Associate Fellows Breakfast	No. _____	@ \$ 12.00	\$ _____
Tues., May 12 Association Annual Business Meeting and Buffet Lunch	No. _____	@ \$ 15.00	\$ _____
Tues., May 12 Dinner and Shows at the Seaquarium	No. _____	@ \$ 38.00	\$ _____
Wed., May 13 Aerospace Physiology Society Luncheon	No. _____	@ \$ 20.00	\$ _____
Wed., May 13 Society of NASA Flight Surgeons Luncheon	No. _____	@ \$ 20.00	\$ _____
Wed., May 13 Flight Nurse Section Luncheon	No. _____	@ \$ 20.00	\$ _____
Wed., May 13 Ibero-American Association Luncheon	No. _____	@ \$ 20.00	\$ _____
Thurs., May 14 Space Medicine Branch Luncheon	No. _____	@ \$ 20.00	\$ _____
Thurs., May 14 Canadian Society of Aerospace Medicine Luncheon	No. _____	@ \$ 20.00	\$ _____
Thurs., May 14 Honors Night Banquet	No. _____	@ \$ 40.00	\$ _____
Bank charges for checks drawn on non-U.S. banks		@ \$ 20.00	\$ _____
TOTAL ENCLOSED			\$ _____

METHOD OF PAYMENT: Check _____ Credit Card _____
 (Make checks payable to the Aerospace Medical Association)

Credit Card: MasterCard _____ VISA _____ (NO OTHER CARDS ACCEPTED)

Card No. _____ Expiration Date _____

Signature _____

Mail this form to: Aerospace Medical Association
 320 S. Henry Street
 Alexandria, VA 22314-3579

HOTEL RESERVATION FORM

MAY 10-14, 1992 MIAMI BEACH, FL

AEROSPACE MEDICAL ASSOCIATION
63RD ANNUAL SCIENTIFIC MEETING

1. Complete all information requested and mail form to AsMA Housing Bureau in Miami (see below) by **April 17, 1992**. **NO PHONE RESERVATIONS WILL BE ACCEPTED.**
2. An acknowledgment of your reservation assignment will be sent by the Housing Bureau within a 2-week period. Check the acknowledgment immediately to be sure all information is correct. The acknowledgment will be followed by the actual confirmation from the hotel.
3. Reservations must be guaranteed by supplying major credit card information on this form or by sending a one night's deposit directly to the hotel after confirmation is received from the hotel.
4. All changes and cancellations should be made directly with the Housing Bureau in writing or by FAX (see below). After the cut-off date, last minute changes and cancellations must be made directly with your designated hotel no later than 72 hours prior to arrival for refund.
5. Number all hotels in numerical order of preference. Room assignments are made on a first-come, first-serve basis.
6. In the event your hotel of choice is sold out, the Housing Bureau will secure hotel rooms at the next available hotel.

HOTELS & RATES Number all hotels in order of preference.

	<u>Single</u>	<u>Double</u>	<u>Triple</u>	<u>Quad</u>	<u>Suite</u>
_____ FONTAINEBLEAU	\$95.00	\$110.00	\$125.00	\$140.00	\$380.00 - \$670.00
_____ HILTON (Headquarters)	\$105.00	\$120.00	\$135.00	\$150.00	--
_____ Oceanfront Terrace	\$120.00	\$135.00	\$150.00	\$155.00	--
_____ Oceanfront Terrace	\$135.00	\$150.00	\$165.00	\$180.00	--
_____ EDEN ROCK	\$80.00	\$80.00	\$90.00	--	\$100.00 (Jr. Suite)
_____ COLONY SHAWNEE	\$65.00	\$65.00	\$85.00	\$105.00	--

Indicate type of room requested:

Single _____ Double _____ Triple _____ Quad _____ Suite _____

ARRIVAL DATE _____ TIME _____ DEPARTURE DATE _____

Guarantee to: _____
 Type of major credit card Credit card number Expiration date

NAME OF OCCUPANTS (Bracket names sharing room)

Person to whom confirmation should be mailed:

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone Number (_____) _____

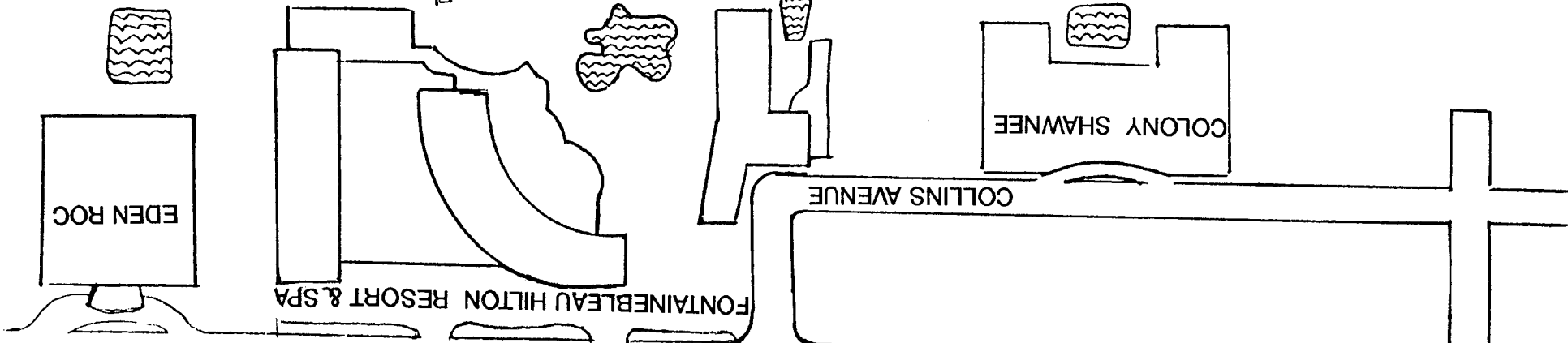
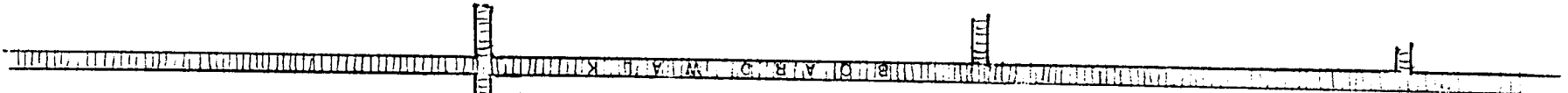
COMPLETE & MAIL FORM TO:

AsMA HOUSING BUREAU
701 Brickell Avenue-Suite 2700
Miami, FL 33131

FAX NO: (305)539-3113

ATLANTIC OCEAN

MIAMI BEACH



INDIAN CREEK

TO MIAMI AIRPORT

ARTHUR GODFREY ROAD



MAY 10-14, 1992
Fontainebleau Hilton Resort and Spa
Miami, Florida

the **WING** of AsMA

63rd Meeting of the Aerospace Medical Association ADVANCE REGISTRATION FORM

FOR SPOUSES OF AsMA MEMBERS

Please read the entire form (both sides) before filling out.

Advance Registration closes April 1 — No refunds after April 10.

Fill out a separate registration form for each person.

Enter the number of tickets desired in the box in front of the activity.

Enter the total AMOUNT of ticket(s) on the line after each activity.

Send your Advance Registration directly to the WING. DO NOT include your registration with your spouse's.

Everyone, including International Members, must send check or money order, payable in U.S. dollars with their Advance Registration to guarantee a place on the tours.

International Members may direct transfer of funds to the Riggs Bank, Washington, D.C., account number 07-08041026.

Wing Dues (for calendar year 1992 billed September 1991) \$20.00 \$ _____
_____ New Member '92 _____ Renewal _____ Dues Paid '92

Compulsory Registration Fee \$25.00 \$ _____ \$25.00

MONDAY, MAY 11

The WING Welcoming Reception for REGISTRANTS ONLY \$ _____ FREE
Starlight Terrace Room, Doral Hotel

TUESDAY, MAY 12 (See back for details)

Tour #1 MIAMI GUIDED Half Day Tour \$17.00 \$ _____
 Tour #2 FLAMINGO GARDENS Half Day Tour \$21.00 \$ _____
 Tour #3 JOHN PENNEKEMP Full Day Tour \$42.00 \$ _____

WEDNESDAY, MAY 13

ANNUAL WING MEETING and LUNCHEON \$24.00 \$ _____
 Tour #4 VILLA VIZCAYA \$17.00 \$ _____

THURSDAY, MAY 14

Tour #5 EVERGLADES Half Day Tour \$26.00 \$ _____
 Tour #6 PALM BEACH Full Day Tour \$32.00 \$ _____

MONDAY-THURSDAY 6:30-7:30 a.m.

Aerobics—Club Atlantic Room, Fontainebleau Hilton Resort and Spa \$ _____ FREE

TOTAL \$ _____

Make check payable to the Wing of AsMA
Please type or print clearly:

Name _____
Last Name First Name Spouse's Name

Address _____ City _____ State _____ Zip _____

I am a Charter Member of the WING

Affiliation: _____ Army _____ Navy _____ Air Force _____ Corporate _____ Civilian _____ Exhibitor Phone _____

Mail this form and your check to:

PAULA LANDRY
8128 Langbrook Road
Springfield, VA 22152

THE WING OF AsMA — ANNUAL MEETING INFORMATION

WELCOMING RECEPTION. Meet and make friends at the WING reception to be held in the beautiful Starlight Terrace Room in the Doral Hotel, a short walk north of the Fontainebleau Hilton. Reception begins at 3 p.m. Free to all REGISTRANTS.

TOUR #1: MIAMI GUIDED Half Day Tour: Tuesday, May 12, 9:30 a.m.-1:00 p.m. \$17.00
Miami is a magical city! Join a step-on guide who will highlight the great homes of the rich and famous. Sites on this tour include Miami's Central Business District, the Art Deco District, Coconut Grove, Little Havana, and Coral Gables.

TOUR #2: FLAMINGO GARDENS Half Day Tour: Tuesday, May 12, 1:00 p.m.-5:00 p.m. \$21.00
Visit 60 acres of LUSH botanical gardens, exotic native plants, citrus groves, arboretums, 19 champion trees, and 200 year old oak trees. A half-mile tram-tour meanders through a natural habitat of flamingos, wading birds, alligators, and crocodiles.

TOUR #3: JOHN PENNEKEMP Full Day Tour. Tuesday, May 12, 9:30 a.m.-4:30 p.m. \$42.00
After a brief stop at Cauley Square, an historical railroad village and present-day collection of assorted shops, it's south to Key Largo for a day of fun and adventure in the sun.

Option A: Luncheon Buffet and Glass Bottom Boat Trip: Enjoy a delicious lunch at the Cascades Restaurant, Holiday Inn Key Largo and then board the 70 ft., air-conditioned glass-bottom MV Key Largo Princess to explore Florida's coral reefs.

Option B: Sundiver Snorkeling Trip: The more adventurous can try snorkeling off the Sundiver for 2½ hours of breath-taking marine sights! Equipment and instruction included in package. Lunch not included.

ANNUAL WING MEETING AND LUNCHEON: Wednesday, May 13, 11:30 a.m.-2 p.m. \$24.00
Club Atlantic Room, Fontainebleau Hilton Resort and Spa.

TOUR #4: VILLA VIZCAYA Half Day Tour. Wednesday, May 13, 2:30 p.m.-5:00 p.m. \$17.00
Visit this great Italian Renaissance mansion and step back in time. Built in 1914 by John Deering as a winter retreat, this historic site is a must.

TOUR #5: EVERGLADES Half Day Tour. Thursday, May 14, 9:30 a.m.-1:00 p.m. \$26.00
Board an airboat at Everglades Holiday Park, and tour through natural vegetation and wildlife to the Native Indian Village. An Indian guide will update us on the history of the Miccosukee and Seminole culture, including an alligator show.

TOUR #6: PALM BEACH Full Day Tour. Thursday, May 14, 9:30 a.m.-5:00 p.m. \$32.00
Visit the official playground of society's rich and famous, the arena for scandal and controversy. Sights include the Kennedy mansion and Trump's famous Largo Mar. Following lunch at the picturesque Grand Colony Hotel, we will tour Florida's Worth Avenue for shopping.

*All tours depart from Collins Avenue entrance.

WING HOSPITALITY ROOM is located in IMPERIAL I Room of the Fontainebleau Hilton Hotel. Hours: Sunday 1-5 p.m., Monday 10:30 a.m.-1:30 p.m., Tuesday 8-9:30 a.m., Wednesday 8-9:30 a.m.

AEROBICS classes will be taught by Lt. Col. Lynn Francis in the Club Atlantic Room, Fontainebleau Hilton, Monday through Thursday, 6:30-7:30 a.m. Col. Francis is a certified aerobics instructor and has kindly volunteered her services to the WING. FREE

ADVANCE REGISTRATION—Individual packets, provided for those who pre-register, will contain schedules, reception invitation, official badge, and purchased tickets. Hours: Sunday 1-5 p.m., Monday 10:30 a.m.-1:30 p.m., Tuesday 8-9:30 a.m., Wednesday 8-9:30 a.m. Carefully fill out the advance registration form, write your check, and mail them to:

PAULA LANDRY
8128 Langbrook Road
Springfield, VA 22152

Aerospace Medical Association Associate Fellow Application and Biographical Update Form

(Check item that applies) This is an application for Associate Fellow status _____ A biographical update _____

Guidelines for Applicants and Associate Fellows updating biographical information

1. To apply for Associate Fellowship, fill in and return this form to Association Headquarters by *August 1* each year.
2. To update biographical information, submit this form to Associate Fellows' Group by *September 1* each year, indicating new information or publications with asterisks (*). Include a new bibliography if new publications are to be considered.
3. Curricula vitae are *not* acceptable in place of the information requested on this form. The only permissible enclosures are a bibliography and one continuation sheet if there is insufficient space in any of the 11 subject areas of this form.
4. To be sure you get full credit for your qualifications and achievements, all requested information should be as complete and detailed as possible. Redundant and immaterial information (e.g., attendance at a 2-day meeting, listing in "Who's Who", etc.) should not be included. Please *print or type* the following information:

1. **Name:** Last _____ First & Initial _____ **Title/mil. rank:** _____
Current address: _____ **Telephone:** _____
Date & place of birth: _____ **Citizen of:** _____

2. **Years in Aerospace Medicine** or related field: Full-time _____ years; Part-time _____ years.

3. **ASMA Member** since _____ (years) _____ **If Associate Fellow:** Year selected _____ (years) _____

4. **EDUCATION & TRAINING:**

Highest Degree _____ Year Awarded _____ Institution _____

Add'l Degree: _____ Year Awarded _____ Institution _____

Post-Graduate Training: Residency (Specialty?), other training; Institution, Tng. time for each:

Courses in Aerospace Medicine or related field (eg, Aerospace Physiology) of more than 3 wks duration:

<u>Course Title</u>	<u>Institution, Year</u>	<u>Duration</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. **CERTIFICATION** by Specialty Board or other National Examining Agency:

<u>Specialty</u>	<u>Board/Agency</u>	<u>Year certified</u>
_____	_____	_____
_____	_____	_____

6. **CURRENT POSITION & EMPLOYER** _____ Since _____

Previous three most significant positions, with dates:

7. **PROFESSIONAL PRODUCTIVITY**

Number of published papers in aerospace medicine _____ in other fields _____ (attach bibliography)

No. of presentations at **national** scientific meetings _____ (Do not duplicate publications and presentations)

FAA AME seminars: No. attended _____ Year(s) _____ No. taught _____ Year(s) _____

8. **ACTIVITY IN AsMA and Constituent Organizations**

AsMA Annual Meetings: No. attended _____ Dates _____

Scientific papers presented _____ Panel presentations _____ Poster presentations _____

AsMA _____ Committee Member: Years _____

AsMA _____ Committee Chairperson: Years _____

AsMA Executive Council Member or Officer: _____ Years _____

AsMA Honor Award(s) (Name of Award, Year Received) _____

Constituent Organizations:

<u>Organization</u>	<u>Date Joined</u>	<u>Officer (Years)</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Constituent Organization Honor Award(s) (Name, Year): _____

Associate Fellows: Officer (dates) _____ Award (date) _____

9. **OTHER:** Pilot (ratings) _____ Flight Surgeon _____

AME or equivalent _____ Member of International Academy _____

Member of or Consultant to National Government body in Aerospace Medicine (specify): _____

Member or Officer in other Aerospace Societies (List) _____

Honors, Awards, Distinctions, Achievements (List) _____

Significant Operational or Clinical Contributions; patents held, etc. _____

10. **COMMENTS, ADDITIONAL DATA** including membership and activities in Affiliate organizations: _____

11. **REFERENCES** (Applicants only):

Print the names of two AsMA members, including one Fellow, who are acquainted with your professional activities

Date of submission: _____ Signed: _____

CALL FOR PAPERS

DEADLINE: OCTOBER 23, 1992

Aerospace Medical Association 1993 ANNUAL SCIENTIFIC MEETING

The 1993 Annual Scientific Meeting of the Aerospace Medical Association will be held May 23-27 at the Sheraton Centre Hotel, Toronto, Ont., Canada. The scientific sessions will emphasize new findings in aviation, space, and environmental medicine. All interested persons are invited to submit abstracts of studies which they wish to present as slide talks or poster presentations. Abstracts which meet format requirements will be reviewed by three or more members of the Scientific Program Committee and will be judged on originality, relevance, and scientific quality. Accepted abstracts will be published in the Association's journal, *Aviation, Space, and Environmental Medicine*.

PLEASE NOTE: Since publication will be by photo-offset, the special abstract submission form (overleaf) with the non-repro blue box **MUST** be submitted. FAXes are not acceptable. **DO NOT** draw around the box so that it will reproduce in a copying machine. Neatness and accuracy of the original are of paramount importance. Sharp, black, elite-size (10 pt) type or larger is required. Do not erase--use correction fluid if necessary. Extra copies are available from the Aerospace Medical Association, 320 S. Henry St., Alexandria, VA 22314; phone (703) 739-2240.

RULES FOR SUBMISSION OF ABSTRACTS:

A. Slide and Poster Presentations:

1. Only original material which has not been published or presented at other major meetings is acceptable. The first author is required to sign a statement which affirms that. Be sure that the necessary clearance has been obtained before submitting an abstract.
2. An individual may present only one paper and must appear as first author on the abstract (1st author = presenter.)
3. One author **must** be a member of AsMA (identified by * in the abstract). If none of the authors is a member of the Aerospace Medical Association, the abstract must be **accompanied** by a note of introduction for the first author signed by an AsMA member.
4. Slide sessions allow 10 min of verbal presentation followed by 5 min for questions. Poster sessions are assigned display space for 3 hours with the author expected to be present for at least 1.5 hours. The Program Chair retains final authority to select the presentation mode.
5. **Abstracts MUST be submitted on this form (with BLUE BOX) along with five photocopies. FAXes are not acceptable. DEADLINE: Oct. 23, 1991. Submissions which are not received at AsMA headquarters on time or which do not conform to the rules given here and on the reverse side will be rejected.**
6. Each abstract must show the title, author, and institution where the work was performed. The text must include an introduction (rationale), methods, results, and conclusions: it is not adequate to state "results will be discussed." The format is shown in the example on this page, and further details appear on the Abstract Submission Form (see reverse side). An abstract will be rejected if it does not clearly demonstrate new data of significant interest.
7. For case histories, clinical papers, CME topics, and panels, the text may deviate from the prescribed format.

B. PANELS:

Overview-type abstracts will be required of panel moderators. Individual panel members **must** also submit abstracts and their submissions must conform to the same deadline and the same rules as all other abstracts. The overview abstract with the abstracts of each presentation must be submitted together **in one package**. The panel will not be considered for presentation unless **all** abstracts have been submitted for review.

Regarding publication: Those panel abstracts by individuals--if submitted on time and if approved by the Scientific Program Committee--will be published along with other scientific abstracts in both the program and in the May issue of the journal. Overview abstracts and certain non-substantive panel abstracts will be printed only in the program, but will not be reprinted in the May issue of the journal.

TOPICS:

1. Aviation Medicine
2. Space Medicine
3. Environmental Medicine
4. Aerospace Physiology
5. Exercise Physiology
6. Neurophysiology/Vision
7. Acceleration, Escape, and Impact
8. Human Factors and Man-Machine Interactions
9. Flight Safety and Accident Investigation
10. Performance/Psychology/Psychophysiology
11. Nursing
12. Medical Standards and Health Maintenance of Aircrew
13. Health Promotion and Wellness Programs
14. Aerospace Occupational Health
15. Other Related Topics

HELICOPTER IN-FLIGHT HEAT STRAIN AND EFFECT OF PASSIVE MICROCLIMATE COOLING. G. R. Banta. Naval Health Research Center, San Diego, CA 92138-9174.

INTRODUCTION. High heat loads due to engine exhaust intake and high ambient temperatures within a helicopter fuselage during flight, specifically hover, have resulted in reported episodes of symptomatic heat strain among aircrew. An in-flight study was conducted to assess: a) in-fuselage ambient temperature during Navy H-3 helicopter at-sea operations in a high heat environment (Persian Gulf); b) presence or absence of any cardiac strain or excessive physiological heat load; and c) effectiveness of reducing these responses by wearing a protective cooling (ice) vest (IV). **METHODS.** Fifteen helicopter aircrew were monitored [heart rate (HR), skin (SK)/rectal (RT) temperatures] in both IV and non-IV conditions during flight while wearing standard flight equipment. **RESULTS.** Across all flights and flight conditions (FC), average ambient temperatures were 38° C dry bulb [range 33° C (in-flight) to 43° C (hover)]. HR was greatest during hover and on-deck, range 89.9-143.0 bpm for rest and workload. Corresponding HR with IV, range 79.9-85.9 bpm were significantly reduced ($P < 0.05$). RT was not found to be different during IV/non-IV or FC, however, ANOVA demonstrated interaction of individual skin sites and mean weighted skin temperature with IV/non-IV and FC ($P < 0.05$). **CONCLUSION.** Aircrew performing at-sea in-flight helicopter operations in an area of high ambient heat are subject to heat loads that may produce marked cardiac strain and potential heat stress conditions. Wearing of a protective cooling vest appears to reduce this threat.