proposed. **Methods:** A military aircrew member presented for evaluation and consideration for return to flying duties following an acute transmural myocardial infarction and coronary stent procedure. Subsequent evaluation included non-invasive cardiac testing, coronary angiography and deliberation by a board of experienced military aeromedical physicians. **Results:** Twelve days after an uncomplicated pregnancy and delivery, this 39 year old female aircrew presented with acute coronary syndrome and evolved a transmural inferior myocardial infarction by enzymes and ECG changes. Coronary angiography showed partial occlusion the distal right coronary artery by thrombus, possibly from a ruptured plaque. A branch of the circumflex artery had a long segment of irregular, significant narrowing, apparently atherosclerotic. Intervention with stent was performed only on the distal right coronary artery lesion. After an uneventful recovery she presented for aeromedical evaluation. Noninvasive cardiac testing showed evidence of myocardial infarction but no reversible ischemia and normal cardiac function. Coronary angiography showed excellent stent results and essentially normal coronary arteries elsewhere, including at the site of the previously noted circumflex branch lesion. **Discussion:** Based on the specific aircrew position, cardiac testing results and an anticipated event rate of 2-4% per year from the literature and limited experience in military aircrew, return to flying duties was recommended.

Learning Objectives: 1. Short-term cardiac event rates for young subjects with myocardial infarction. 2. Aeromedical concerns regarding myocardial infarction and various aircrew positions. 3. Application of standard cardiac litrature and aircrew databases to an aeromedical disposition.

[343] SPILLING TEA AT THE TEA PARTY / THE FULL MONTY

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The case of a private pilot with a history of metastatic malignant melanoma is presented for consideration of a (FAA) special issuance. The original presentation was of a lung lesion originally diagnosed as a bronchogenic squamous cell cancer n 2000, which was resected. Subsequently a cerebellar lesion was found and resected, and it and the original lesion were reclassified as melanomas. The original lesion may represent a collision tumor (two tissue types). Two large lymph nodes were subsequently found at the anterior border of the right latissimus dorsi and under it, two years apart. The airman is approaching three years since the last node was excised with no further evidence of disease. The arguments for and against medical certification will be presented to delineate the evidence on which to base an aeromedical decision.

Learning Objectives: 1. Things aren't always as simple as they appear (Monty Hall Paradox). 2. The "reasonable man" approach may be fettered by protocols. 3. Some decisions must be made without all the facts.

Tuesday, May 13 *4:00 PM*

SLIDE: Training & Selection Issues

[344] USING SELF-CRITIQUE TO IMPROVE GENERAL AVIATION PILOTING SKILLS: AN EMPIRICAL INVESTIGATION

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Background: After each practice/training flight during general aviation (GA) pilot training, the instructor debriefs the pilot-in-training. Frequently, however, these debriefs tend to be "one-way": the instructor talks and the pilot-in-training listens. Recently, research has examined a debriefing strategy which includes learner self-critique (Prince, Salas, Brannick, & Orasanu, 2005). In general aviation, this style of debrief is referred to as "Learner Centered Grading" (LCG) (French, Blickensderfer, Summers, Ayers, & Connoly, 2005). LCG includes two parts. First, the learner completes a self-assessment checklist. Next, the learner discusses this self-assessment in a detailed debrief with his/her instructor. The purpose of the LCG process is to stimulate growth in the learner´s thought processes and, in turn, behaviors. The current study examined the efficacy of the LCG debrief to train task management and single pilot resource management skills in GA pilots-in-training. **Methods:** 31 participants (pilots-in-training) performed a 50-minute simulated flight scenario during which a variety of challenging events occurred (e.g., Landing gear failure, Pitot tube freeze-up). Next, each participant was debriefed by a certified flight instructor. Participants in the control group received a traditional style debrief, and participants in the experimental group, received an LCG debrief. The participants then flew another 50-minute flight scenario. **Results:** Pilots-in-training in the experimental group demonstrated significantly better performance on behaviors relating to communicating with the passenger, using the checklists, and overall performance than did the pilots-in-training in the control group. **Conclusions:** Changing the post-exercise debrief to the LCG style improved pilot-in-training performance on task management related skills. Most likely, these results will generalize to other skills. This research demonstrates the LCG style debrief´s effectiveness and also underscores the importance of feedback, in general, to simulation based training.

Learning Objectives: 1. Describe the "Learner Centered Grading" debriefing style. 2. Explain the difference between the "Learner Centered Grading" flight debrief and the traditional style of debrief. 3. Describe the research methods used in this study.

[345] THE ATTITUDES OF U.S. NAVY DIVERS TOWARDS THE NONTECHNICAL SKILLS REQUIRED FOR SAFE AND PRODUCTIVE DIVING OPERATIONS

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Introduction: Although U.S. Navy diving is remarkably safe, when accidents do occur, the majority are caused by nontechnical or human factors errors. An attitude questionnaire based upon the Flight Management Attitude Questionnaire (FMAQ) was used as the basis of a diving attitudes questionnaire. **Results:** The confirmatory factor analysis (CFA) process resulted in a stable factor structure, with an acceptable level of reliability for the three subscales of the attitude questionnaire. From the 272 responses obtained, junior divers are found to want to ask questions, but senior divers do not desire to be questioned. Furthermore, Navy officers and inexperienced divers are more sensitive to the effects of fatigue and stress on performance than senior divers. **Discussion:** Crew Resource Management (CRM) training may provide a palatable method for changing the attitudes of U.S. Navy divers to the nontechnical skills required for safe and productive diving operations.

Learning Objectives: 1. The attitudes of U.S. Navy divers towards the nontechnical skills required for safe and productive diving operations will be discussed.

[346] SPATIAL ABILITY AS A PREDICTOR OF SPACE ROBOTICS TRAINING PERFORMANCE

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Introduction: Current astronaut robotics training procedures are both long and intensive. Trainees vary significantly in their initial performance, natural ability, rate of learning, and level of mastery. Initial performance is not a reliable predictor of final level of mastery and, in a few cases a protracted training period is needed to achieve mastery. We hypothesize that metrics of human spatial ability can predict performance on certain tasks, such as maintaining spatial situation awareness and arm clearance, that are learned and practiced during robotics system training. **Methods:** We tested the spatial ability of 40 current astronauts with robotics training experience against four tests: 2D Card Rotation (Card), Vandenberg Mental Rotation (MRT), the Purdue Spatial Visualization – Views (PSVT) and Perspective Taking Ability (PTA). These were correlated with scores on the NASA Aptitude for Robotics Test (ART) "Gate" task, a measure of initial robotics performance, and the General Spatial Awareness (SA) score of the astronauts´ final evaluation test of their first robotics training course, either Generic Robotics Training (GRT) or Shuttle PDRS Training. Only the data from the 13 astronauts who took ART prior to their robotics training was analyzed. **Results:** There are significant correlations among the standardized Card, MRT, and PSVT scores and the General SA score for GRT, as well as among MRT, PSVT, and PTA and the log(standardized "Gate" score). As expected, no significant correlation was found between the initial ability and final level of mastery. No significant effect of gender was found. **Discussion:** The Card Rotation, Mental Rotation, and Purdue Spatial Tests are potential predictors of General Situation Awareness performance during robotics training. Further analysis of performance in individual lessons of a training course will determine if learning rates can also be predicted. Supported by NASA Cooperative Agreement NCC9-1 with NSBRI.