

FROM: US Delegate, Commission Internationale Medico-Physiologique, FAI

TO: President, CIMP. Executive Director, US National Aeronautic Association

SUBJECT: Annual Report of US Topics in Air Sports Medicine and Safety

Summary:

1. During 2011, there were no significant decreases in the safety of air sports in the USA.
2. Similarly, there were no significant interventions that would increase safety in the future.
3. An air racing accident, attributed to a mechanical failure, resulted in 11 fatalities and numerous injuries. The NTSB has recommended changes in aircraft testing and aeromedical evaluation and acceleration tolerance for racing pilots.
4. Controversy around the Sport Pilot Licence continues.
5. AOPA may propose a further decrease in the screening examinations that would allow carrying a passenger with no formal FAA flight physical examination. However, there is no information on this rumored proposal on the AOPA web site.
6. The Therapeutic Use Committee of CIMP evaluated several TUE requests, and now uses the ADAMS program to more efficiently record deliberations and decisions.
7. The FAI Office, and particularly Ms. Segolene Rouillon, processes TUE requests very competently.
8. The Executive Committee, FAI, is still evaluating the most efficient and acceptable means of establishing mandatory WADA anti-doping procedures, particularly the Out of Competition Registered Pool of aerial athletes.

Accident Review:

1. A search of the National Transportation Safety Board accident database for CY 2011 was performed using several key words: aerobatic, air show, competition, and glider.
 - a. 1-3 fatal accidents occurred during air shows.
 - b. Aerobatic accidents, about 20, are almost always caused by pilot skill errors, insufficient briefing and/or practice in formation flying. Many, if not most, occur at the pilots' home field, or over his/her home or a friend's home. This raises the suspicion of excess risk, and/or excess arousal, as contributory.
 - c. A widely publicized accident occurred at the annual Reno Air Races, Nevada. A highly modified P-51 Mustang failed to execute a corner and impacted into the spectator stands. The location of the spectator stands is at the bottom of the course depiction, near pylon 1.: http://www.airrace.org/at_the_races/course.php The stands are outside the oval course, and the velocity vector of the racing aircraft is aimed at the spectators during part of the oval, anti-clockwise racing course. Air show and competition planners should take note, and analyze the probable impact location in the event of a pilot error, incapacitation, or mechanical failure. The ideal location for spectators may well be *inside* an oval or circular course. Based on the Ramstein air show accident with 80+ fatalities in the 1980s, the FAA requires show lines to be 1500' away from the spectators, and no aircraft passage above the spectators if there is a possibility of collision or incapacitation that would aim the aircraft at the crowd.

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- d. The NTSB report is not complete. However, in a press release NTSB recommended several changes to the Reno Air Races, including G tolerance training and studying G suits. The report indicates probable cause as incapacitation from G forces with later failure of a trim tab and an excursion to 9G. <http://www.nts.gov/news/2012/120410.html>
 - i. Based on this incomplete data, I conclude that GLOC is *not* probable.
 - ii. When GLOC occurs, all muscle activity ceases and the aircraft assumes ballistic flight along the velocity vector.
- e. The report also indicated that this aircraft had not been thoroughly tested before competition. The final report will, I hope, include enough detail to analyze the probability of mechanical vs. human failure.
- f. For FAI and CIMP, this tragic accident emphasizes *the value of physiological training for all pilots who will sustain significant G forces in competition and/or training.*

Regulatory Changes:

1. The FAA will require electronic entry of pilot information only WEF 1Oct12: <https://medxpress.faa.gov>
2. No changes are proposed to the current Sport Pilot aircraft or airmen certification.
3. A colleague in the FAA indicated that the FAA might consider more extensive medical screening for air show pilots. I sent him a description, and references, to our mature, highly functional TUE process, as an example of how some elements of a medical qualification process might be structured.

FAI Anti-Doping Progress:

1. Considerable discussion continues to derive the best method to comply with WADA Out-of-Competition drug testing.
2. I believe we should designate a small pool of athletes from volunteer sporting Commissions for the OOC Registered Pool. The Commissions have had time to analyze the resistance to the initial call for OOC testing athletes. More publicity has taken place. I believe a new request will be more readily acceptable.
3. The TUEC process is functioning well.
4. However, there is continuing evidence that many aerial athletes are not aware of the need for TUE. We need to educate the population more thoroughly.

Suggested Recommendations from CIMP to FAI

1. *Assess all prospective competition venues for the possibility of aircraft impact in the event of mechanical failure or pilot incapacitation.*
2. *With no further delay, implement a small test of the Registered Testing Pool.*
3. *Clearly define the responsibility for in-competition testing, FAI and/or the national event sponsor.*
4. *Retrospectively evaluate in-competition accidents to assess possible physiological causes, e.g., incapacitation, GLOC, SDO.*

Respectfully submitted

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