

Aerospace Medicine Summit

Forward Together

Physiologic Events/ Neck Back Pain Working Group

Mar 2019





Overview

Concern: How do we keep the pilot [healthy and injury free] in the jet as long as possible?

Issue: Equipment (particularly helmet) and flight characteristics of modern aircraft increase the physical demand on the pilot. Increased incidence of back and neck injury in fighter pilots and pilots of other airframes may be a direct result. This may be an indicator of a more pervasive threats to performance.

Assumption: This represents an opportunity to provide primary and tertiary interventions to optimize the human weapon system to improve performance and longevity in their airframe.

Recommendations: 1. Create a primary and tertiary Preventive program 2. More research is needed 3. Improve the ergonomics of the equipment, 4. Incorporate outside medical services sought by pilots into the squadron

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Nations Lessons Learned

■ Germany

- There is a physical training book that they provide.
- Looking to start early while pilots are at the beginning.
- Preventive and rehab.
- Concept- FS, Sports Psychologist, Physio therapist, they are separate from the medical records.
- Note that the younger pilots move their heads because they don't have as much SA within the jet. Older pilots not as much.
- Able to accomplish good results with minimal equipment.

■ US

- Embedding medical capability into the squadron improves performance and care
- Using language specific to culture and mission set improves buy in
- Pilots/CC get frustrated by not being asked what is important to them

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Nations Lessons Learned

GBR

- **Pilots are allowed to go see the physiotherapist without seeing the Flight Surgeon.**
- **Using a tiered approach. Looking at it as a holistic approach.**

CAN

- **Gathered data on self medication, when pilots took themselves off the schedule, who sought outside medical care—release to leadership had unintended, adverse consequences for squadron and medical.**
- **Collecting information from flight planning systems may help with metric tracking.**
- **Translating lost time into \$\$ can help with getting leadership buy in.**



Challenges

- **Trouble getting buy in from leadership and pilots.**
- **In fighter pilots: Two different population to examine, functional issues (younger pilots) with more head movement, medical issues (older pilots) with neck and back pathology**
- **Different airframes (including rotary and non-fighter) have similar but distinct MSK injury patterns**
- **Is there a risk in removing the flight surgeon from the process?**
- **Translating into practice especially with the small bandwidth that is available.**
- **How do we measure success? What sort of measures are important... is simple reduction of subjective pain the most important question?**
- **How do we improve the relationship between pilot and medical community?**



Consensus Recommendations

Preventive Program: Three aspects- 1. Assessment, 2. Intervention 3. Measures

Three levels of assessment:

- 1. Functional (Physio) assessment for physical/anatomic limitations to movement**
- 2. Fitness Evaluation to ascertain baseline and track improvement/changes**
- 3. Medical Assessment (annual physical)**

Two Arms of Intervention 1. Physical 2. Mental

Physical: Four progressive levels of physical fitness

- 1. Basic aerobic fitness; 2. Basic muscular strength/endurance; 3. Functional movement fitness; 4. Performance fitness**

Mental components:

Sports psychology, fatigue management, resiliency building

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Consensus Recommendations

Program characteristics

- **Consider the [fighter] pilot an athlete and introduce the program as performance enhancement/sports medicine.**
- **Mandatory participation: Tied to and targeted toward pilot training—must advance in fitness to progress in training**
- **Must have an equipment and no equipment options**
- **Supported by nutrition and self care instruction**
- **Team: FS (lead?), trainer, (aerospace) physiologist, chiropractic, (sports) psychology, nutritionist**
- **Supported by research data for how this will make the warfighter more lethal; “win a rate fight”**
- **Possible outcome measures: decreased pain, improved performance, lost duty time, endurance, strength, HUD tape outcomes, medical board rates, readiness, time/\$\$ saved**

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Consensus Recommendations

Future Related Research

- **Outcome data collection on what is important to Commanders**
- **Outcome data collection on what is important to pilots**
- **Data collection on different physical training programs measuring outcomes important to pilot/CC**
- **Data collection on program impacts to neck pain and ergonomics**
- **Data collection on specific performance metrics**



DANKE!!

- Renard (FRA)
- Retrard (FRA)
- CAPT. Alessardo Scallius (ITA)
- CAPT. Voleria DiMefio (ITA)
- Nehring (GAF)
- Kruschinski (GAF)
- Leiterhos (GAF)
- Anthony Turner (USA)
- Kristy Hicks (USA)
- K Gallergher (UK)
- R Vail (UK)
- Cuiz-Michael Reichert (GER)
- Helmut Fleischer (GER)
- Odysseas Paxinos (GRE)
- Roope Sovelius (FIN)
- Dan Murray (USA)
- Beatriz Puente (SP)
- Zschommler (GAF)
- John Crowley (USA)
- Erin Smith (CAN)
- Nathalie Duvigneaud (BEL)
- LT Damasdi (HUN)
- Maj Claudia Lorenz (GER)
- Rober Doxey (USA)
- Bion Dennis
- Anya Gros (GER)
- Hans-Jurgen Noble (GER)
- Andreas Werner (GAF)
- Jeff Woolford (USA)
- John Crowley (USA)
- Dominic Tan (Sing)

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