



Overview of Neck Pain in U.S. Air Force Fighter Pilots: Combat Air Forces

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Disclosure Information

NATO-Ramstein Flight Medicine Symposium Dr. Ryan Mayes

- I have no financial relationships to disclose.
- I will not discuss off-label use and/or investigational use in my presentation.
- The views expressed are those of the author and do not necessarily reflect the official policy or position of the Air Force, the Department of Defense, or the U.S. Government.

BLUF

- Neck pain is reported by ~70% of fighter pilots in the U.S. Air Force Combat Air Forces (CAF)
- Neck pain can impact sortie performance and off-duty lifestyle
- Multiple treatment modalities are used to mitigate the impact of neck pain

Neck Pain Background: General Population

- Neck pain is not predominantly associated with any one cause or demographic
 - 30-50% of the general population are affected by neck pain annually
 - 15% of the general population will experience chronic neck pain (>3 months) at some point in life
 - 11-14% of the working population will experience activity limitation due to neck pain
- Risk factors include repetitive work, prolonged periods of the cervical spine in flexion, fatigue, and previous neck/shoulder injury

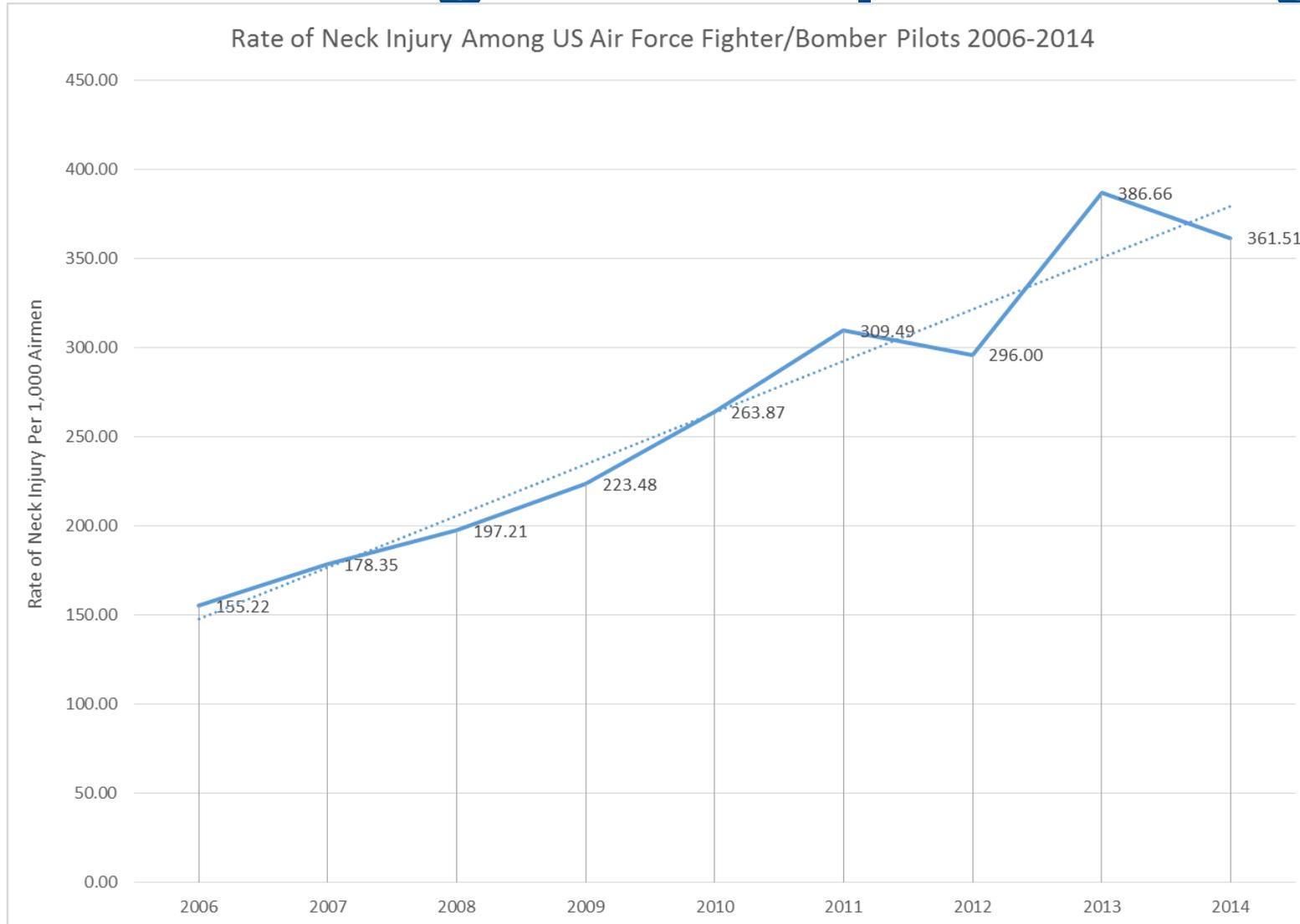
Neck Pain Background: Fighter Pilot Population

- Fighter pilots are at exceptionally high risk of clinical neck pain and injury
 - 72-97% of fighter pilots report cervical pain
- Studies conducted within U.S. Air Force School of Aerospace Medicine (USAFSAM) confirm higher incidence of neck injury in fighters compared to other career fields
 - High-G environments
 - More physically demanding flight (physical stress and equipment burden)



USAF photo by Staff Sgt. William Hopper

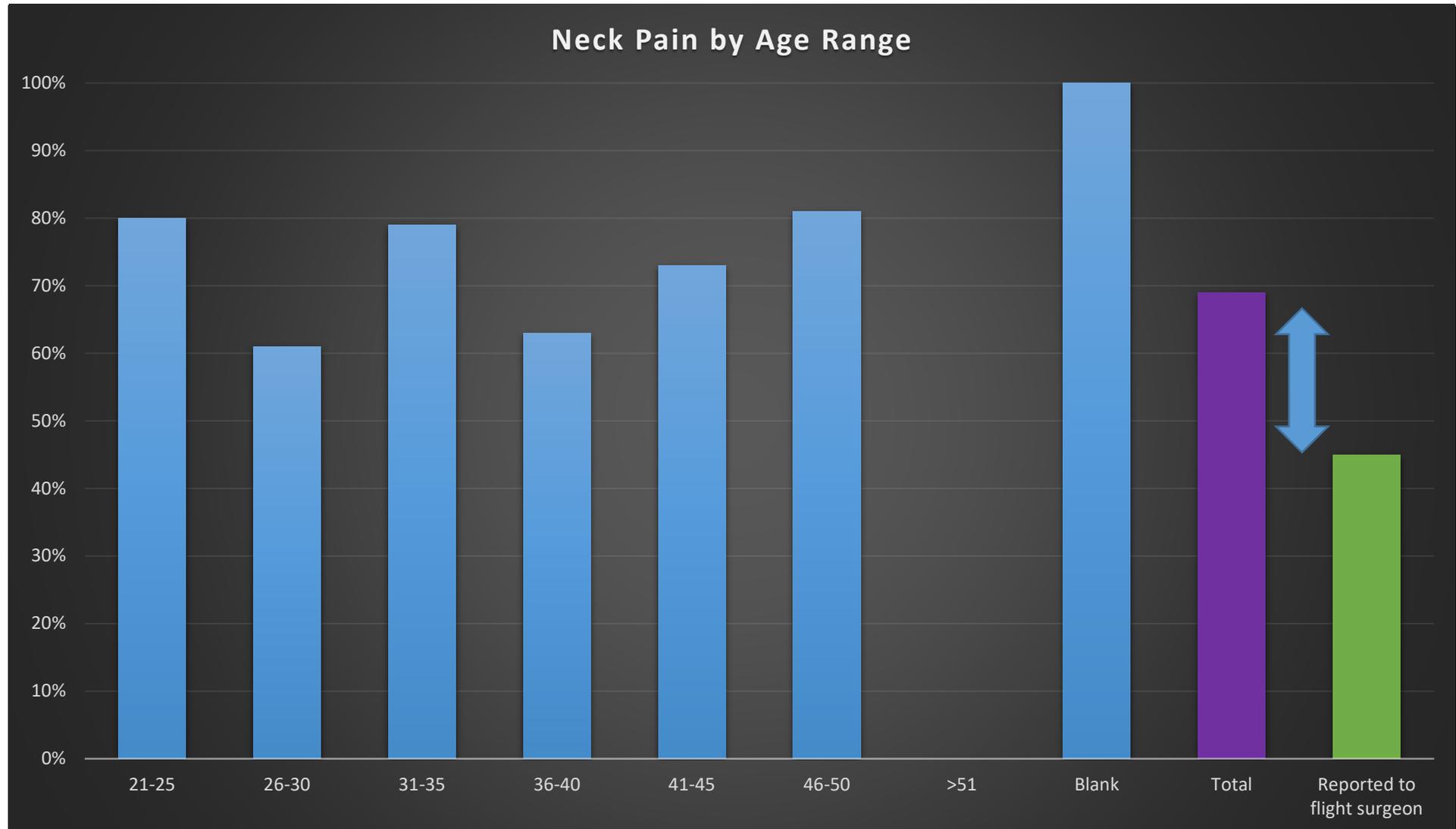
Neck Pain Background: Epidemiology



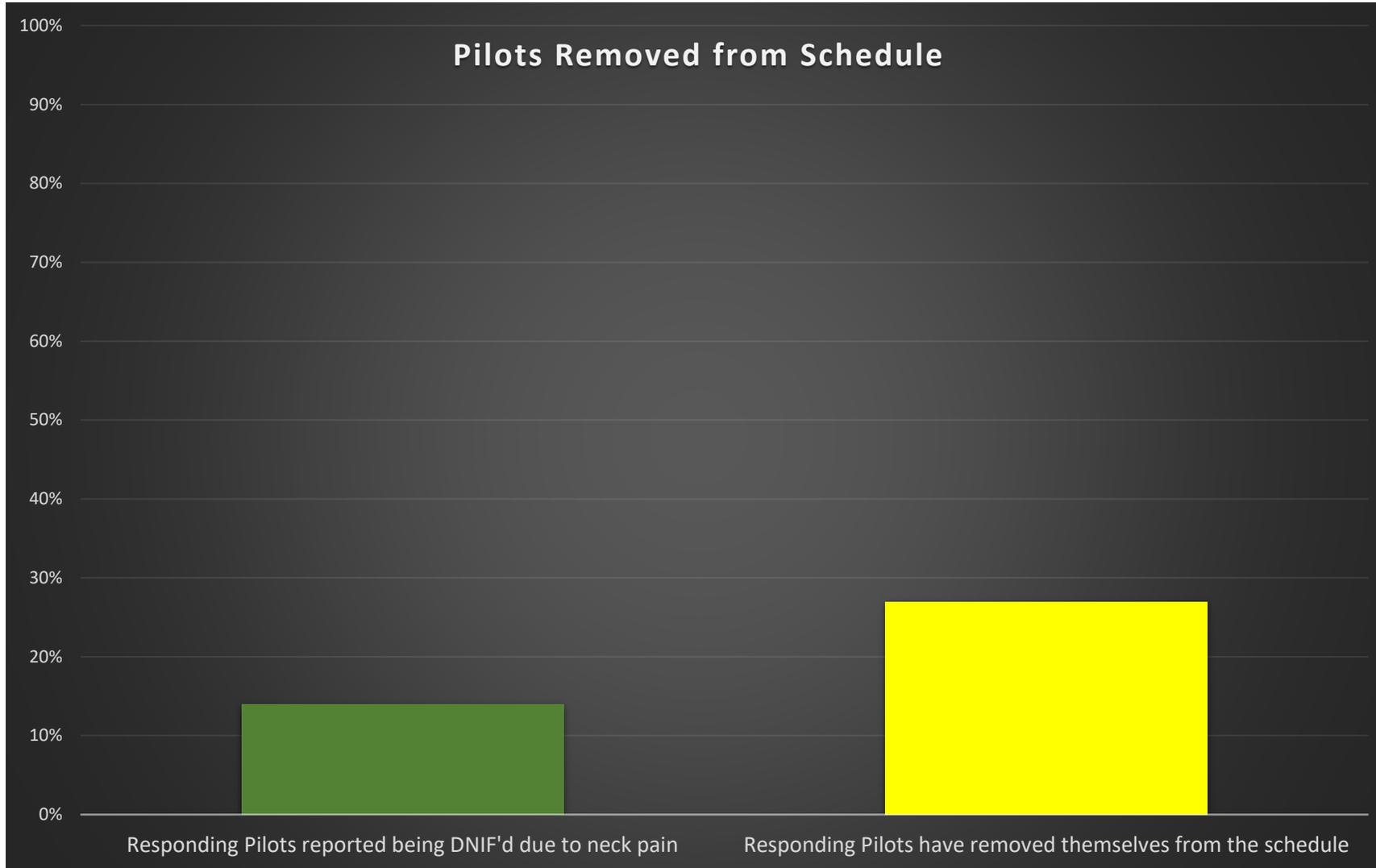
CAF Neck Pain Study: Methods

- Neck pain questionnaire developed by USAFSAM
- Distributed to CAF through Major Commands (MAJCOMs) to flying squadrons
 - Response was voluntary, with no attribution and no impact on flight status
 - Total number of recipients is unknown
 - At least 3 MAJCOMs were included
- n=297

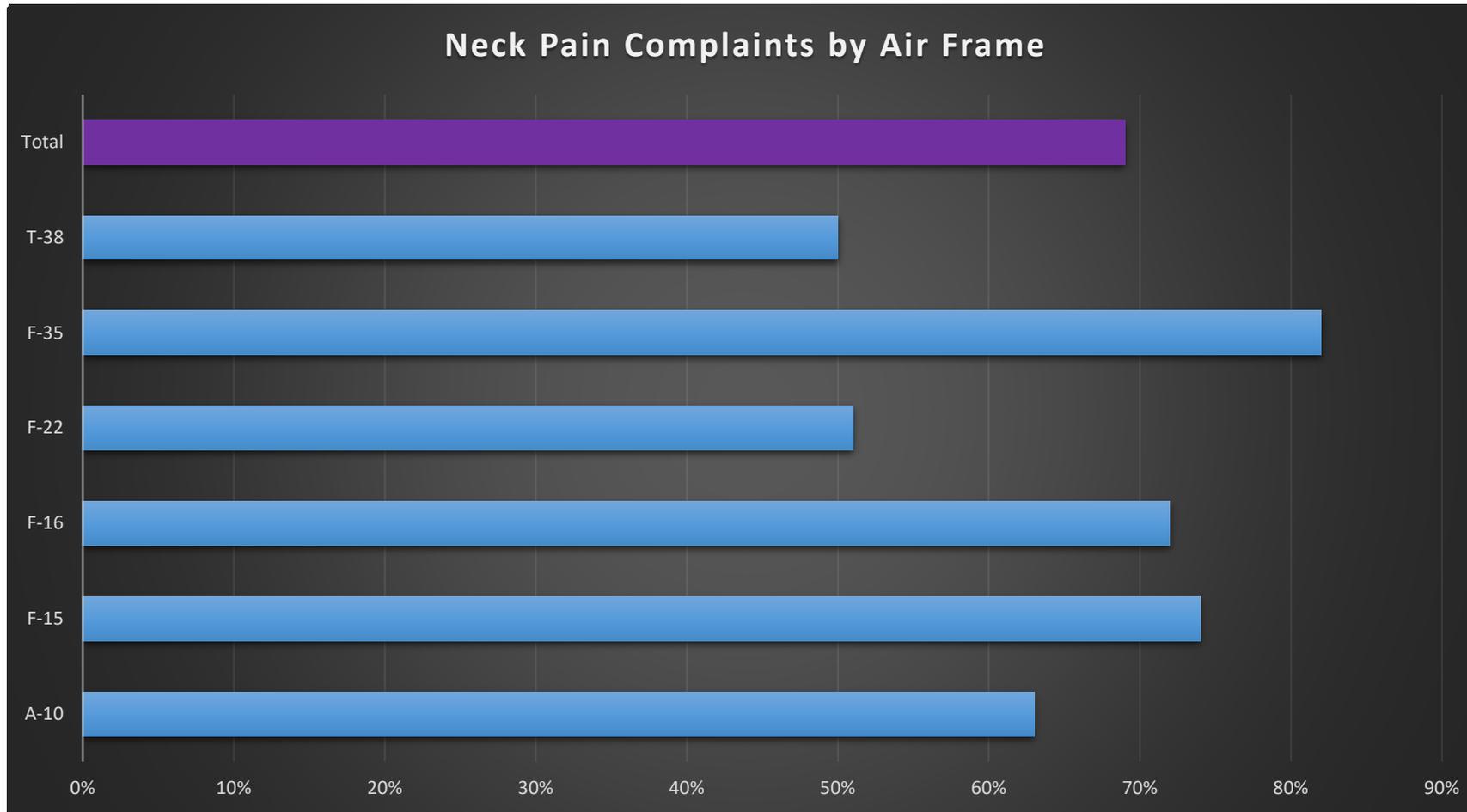
Results: Neck Pain by Age



Results: Pilots Removed from Schedule



Results: Neck Pain by Air Frame

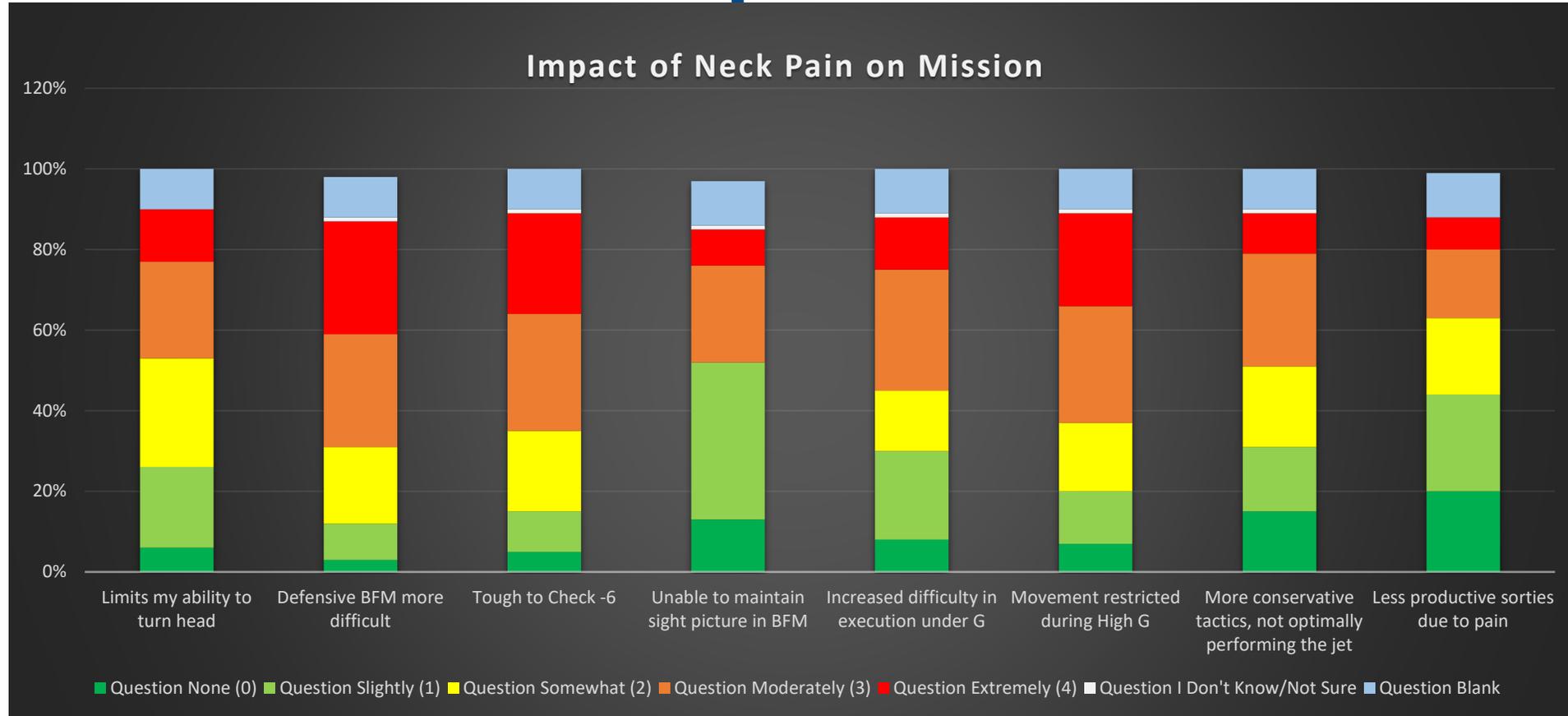


Quote:

“I feel that my neck pain is a direct result of repeated exposure to high G's and wearing a heavier helmet with a more forward CG such as the HMIT increases the pain I experience on high and even lower G sorties. I experience pain, stiffness, and a limited range of motion in my neck on a daily basis.”

- Self-reported; pilot perceptions may impact reporting
- MAJCOM sub-analysis not possible due to de-identification

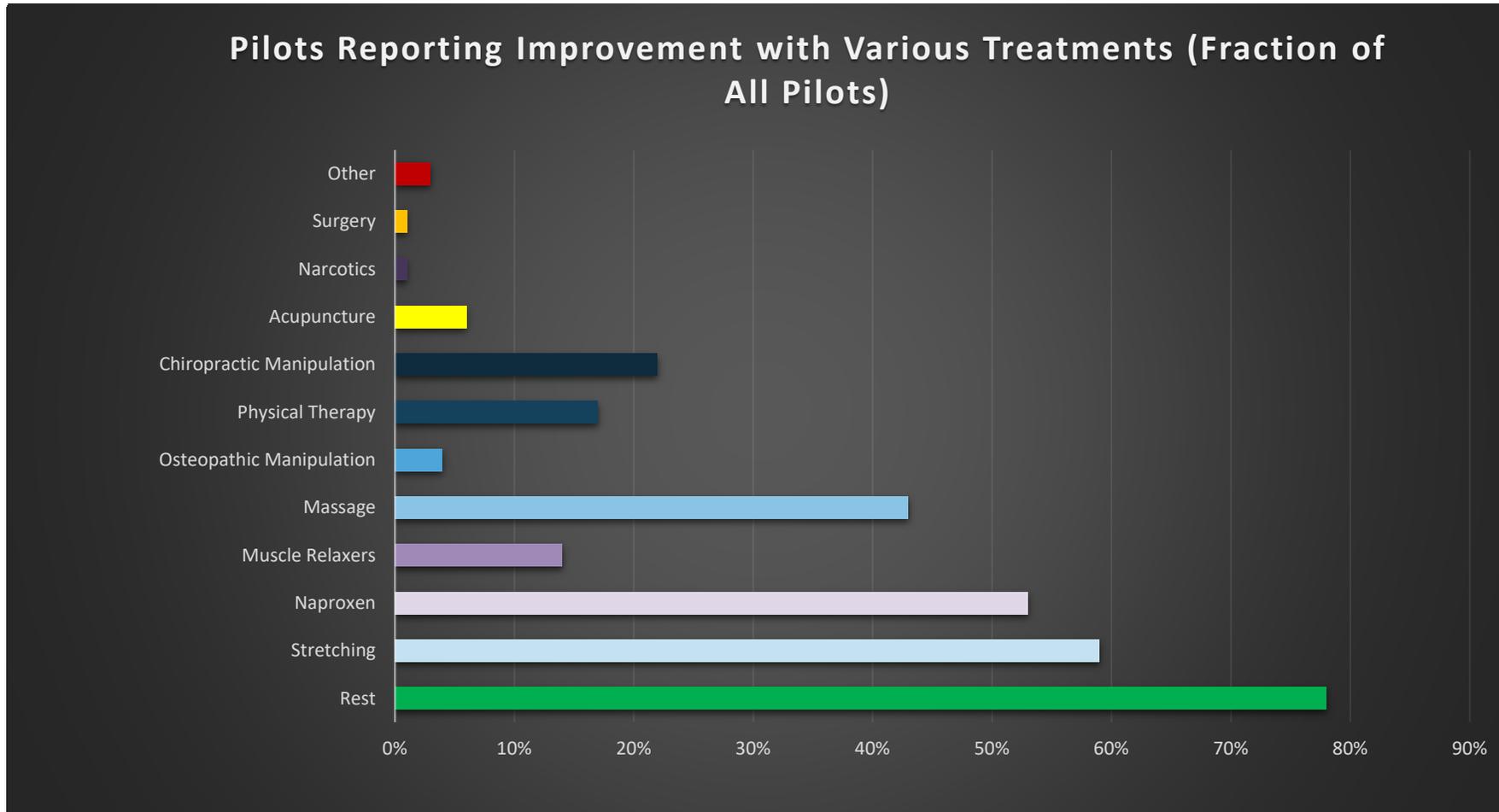
Results: Mission Impact



Pilot Comments:

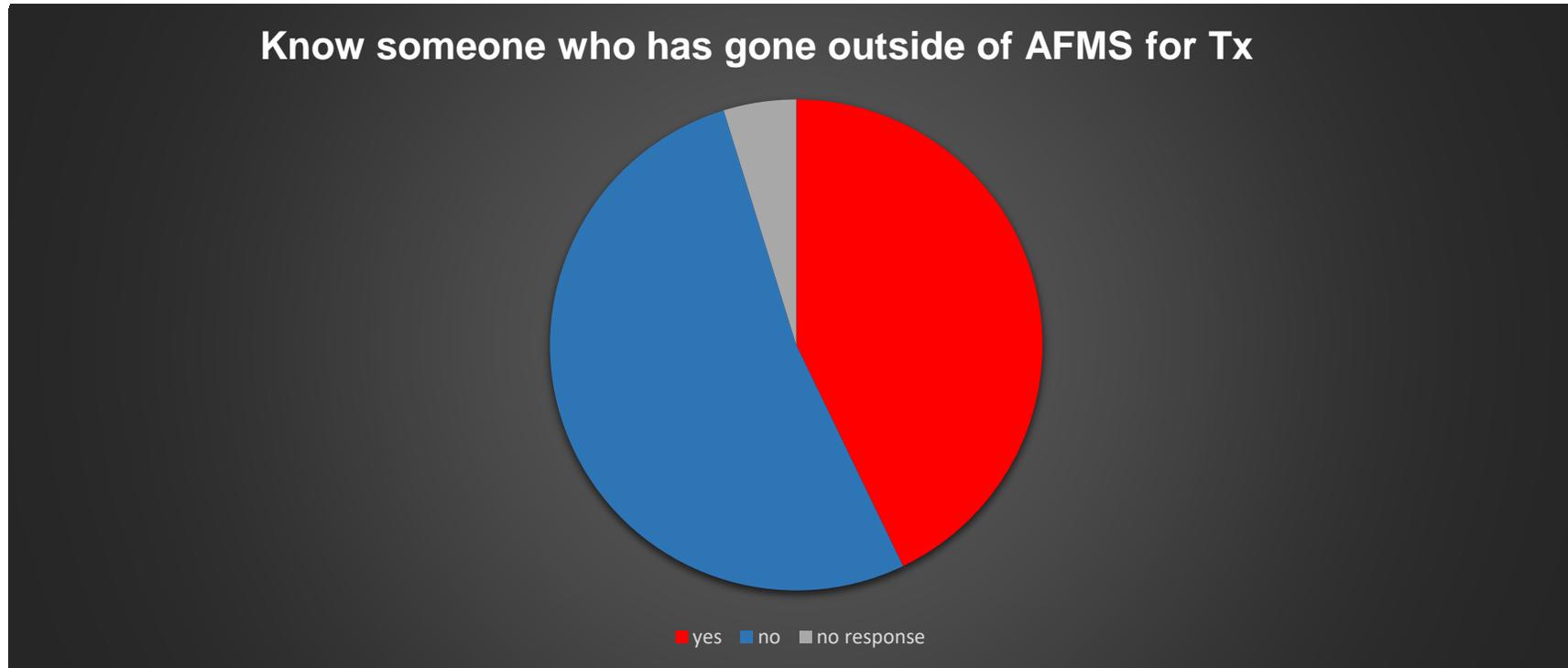
- Neck pain is more of a factor after sorties. I believe the adrenaline during flight mitigates discomfort. I have modified sortie profiles to avoid high G maneuvers, especially those requiring me to check 6.
- My neck was injured in 2007 flying the F-15C with JHMCS during high aspect BFM when rolling my head from aft left to aft right under 8 G's. There was shooting pain all the way down to my right foot.

Results: Treatment Modalities



This is not a controlled study – it is a representation of what pilots currently in the field are doing and what they find works.

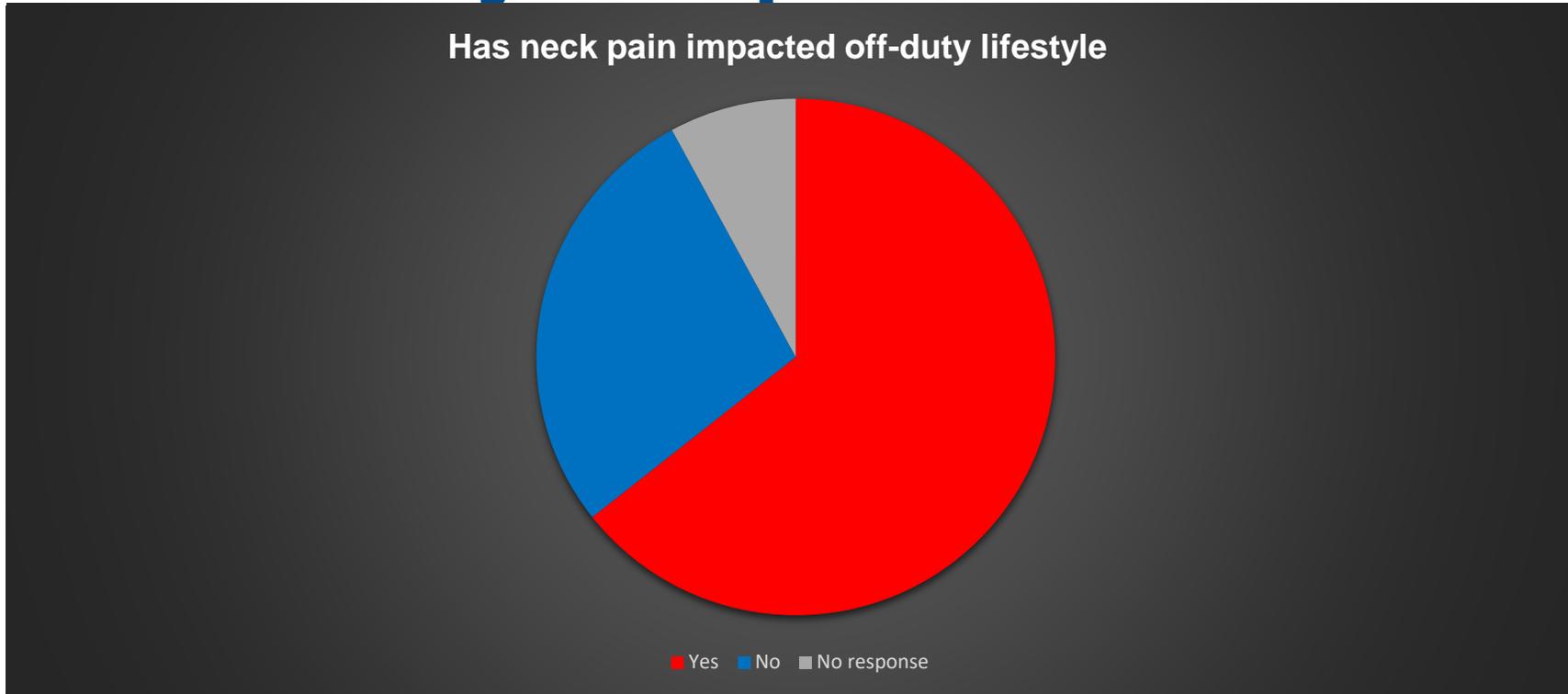
Results: Treatment



Pilot Comments:

- Normal covered care has not assisted my neck pain. Chiropractor and massage has been effective. DO manipulation has also been successful but not all Flight Docs are qualified or have the facilities or appt's available to complete the required manipulation. One of the main reasons I chose to get out of the F-16 was due to neck pain.
- I have sought out and received chiropractic services due to neck pain encountered while performing flight duties. These treatments seemed to help both in the prevention of future neck pain and existing symptoms.

Results: Lifestyle Impact



Pilot Comments:

- I experienced neck pain at these levels during this assignment after a period of multiple high-G sorties. It made turning my head very difficult during flying and day to day life. The pain was in my upper back and trap on my left side. Made sleeping on my side painful as well.
- It gets worse with time. Usually hurt my neck in HABFM with JHMCS that then translates re-injuring my neck during even relatively low G sorties due to previous injuries. Time and stretching are the only two things I have found to help. Often affects my daily life and my sleep patterns.

Response

- ACC Preventive Medical Care-Neck/Back Pain Initiative
 - ACC/SG was tasked by HAF/A3 to determine how the Air Force can provide neck/back pain prevention/treatment options for all fighter pilots
 - Review of options and recommendations have been made
- Next Steps:
 - Deeper analysis of helmet-neck pain relationship
 - Follow-on studies as applicable

Questions?

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USAF photo/MSgt Jeffrey Allen

Preliminary Analysis CAF-Wide Distribution

Impact of Neck Pain on the Mission								
	Question							
		None (0)	Slightly (1)	Somewhat (2)	Moderately (3)	Extremely (4)	I Don't Know/Not Sure	Blank
Counts (% of Respondents)	Limits my ability to turn head	6%	20%	27%	24%	13%	0%	10%
	Defensive BFM more difficult	3%	9%	19%	28%	28%	1%	10%
	Tough to Check -6	5%	10%	20%	29%	25%	1%	10%
	Unable to maintain sight picture in BFM	13%	39%	0%	24%	9%	1%	11%
	Increased difficulty in execution under G	8%	22%	15%	30%	13%	1%	11%
	Movement restricted during high G	7%	13%	17%	29%	23%	1%	10%
	More conservative tactics, not optimally performing the jet	15%	16%	20%	28%	10%	1%	10%
	Less productive sorties due to pain	20%	24%	19%	17%	8%	0%	11%
	Worst Reported Mission Impact	14%	8%	13%	28%	38%	0%	0%