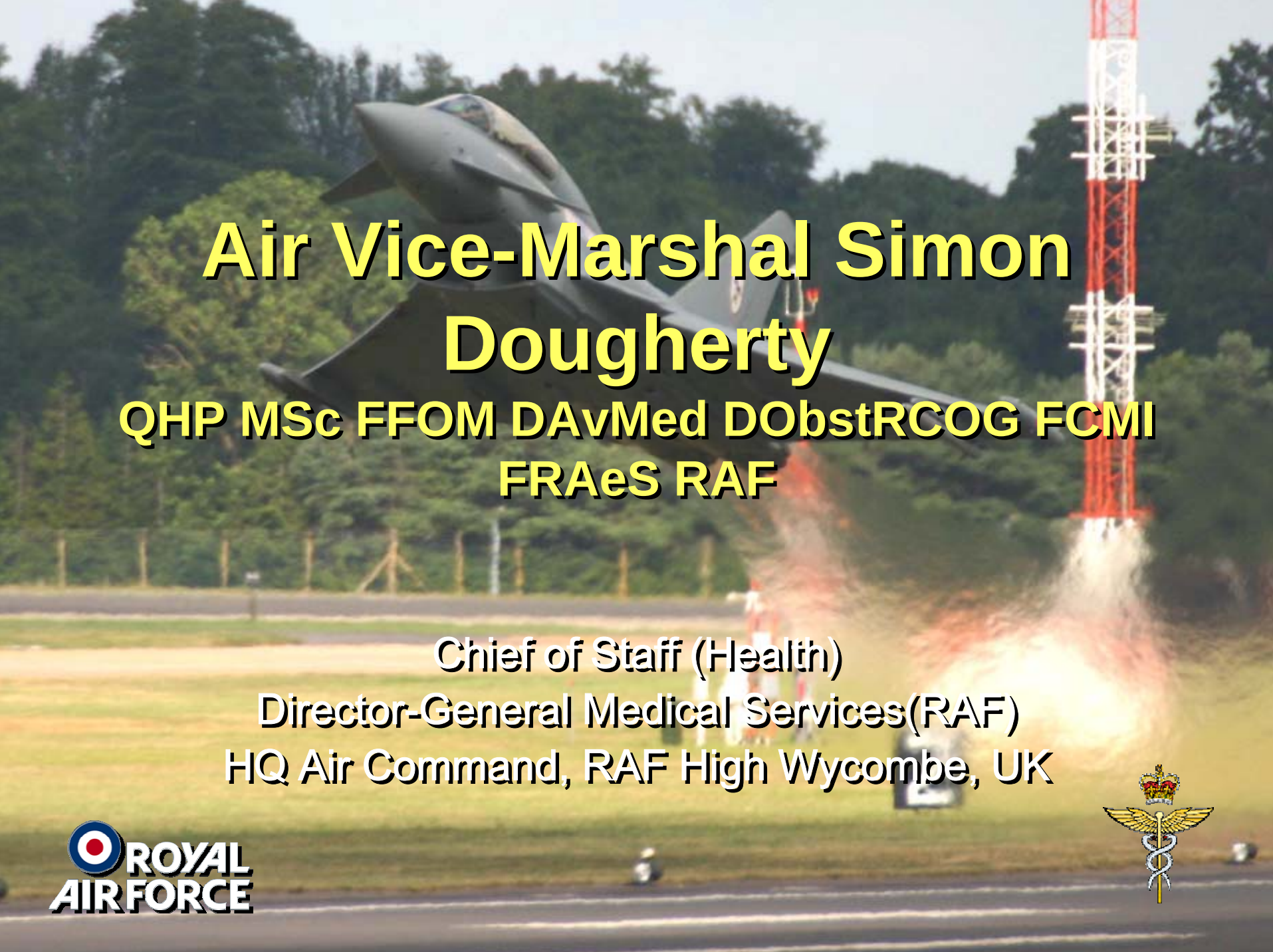


Air Vice-Marshal Simon Dougherty

QHP MSc FFOM DAvMed DObstRCOG FCMI FRAeS RAF

Chief of Staff (Health)
Director-General Medical Services(RAF)
HQ Air Command, RAF High Wycombe, UK

ROYAL AIR FORCE

Typhoon Aviation Medicine Meeting
RAF CAM 26-27 February 2007

Agile Aircraft
RAF Experience

Group Captain David Bruce

MBE MSc MBBS FIMC RCS(Ed) MFOM MRCGP DAvMed DMCC MRAeS AKC RAF

Deputy Director Aviation Medicine

ROYAL AIR FORCE

Typhoon Fleet

- Developing
- Operational Conversion Unit – 29(R) Sqn
- First operational Sqn - 3(F) Sqn
- Operational Evaluation Unit – 17(R) Sqn
- Operational Sqn – XI Sqn
- Tactics and ab-initio pilots
- Southern QRA assumed

ROYAL AIR FORCE

New Aircraft – New Challenges

- Survey
- Physiotherapy study
- Arm pain

ROYAL AIR FORCE

Survey

- Conducted by SMO RAF Coningsby 2007
- All Typhoon pilots
- Issues
  - Neck pain
  - Arm pain
  - Oxygen ear
  - G-related visual changes
  - G-related consciousness changes
  - Oxygen delivery
  - Aircrew Equipment Assembly

ROYAL AIR FORCE

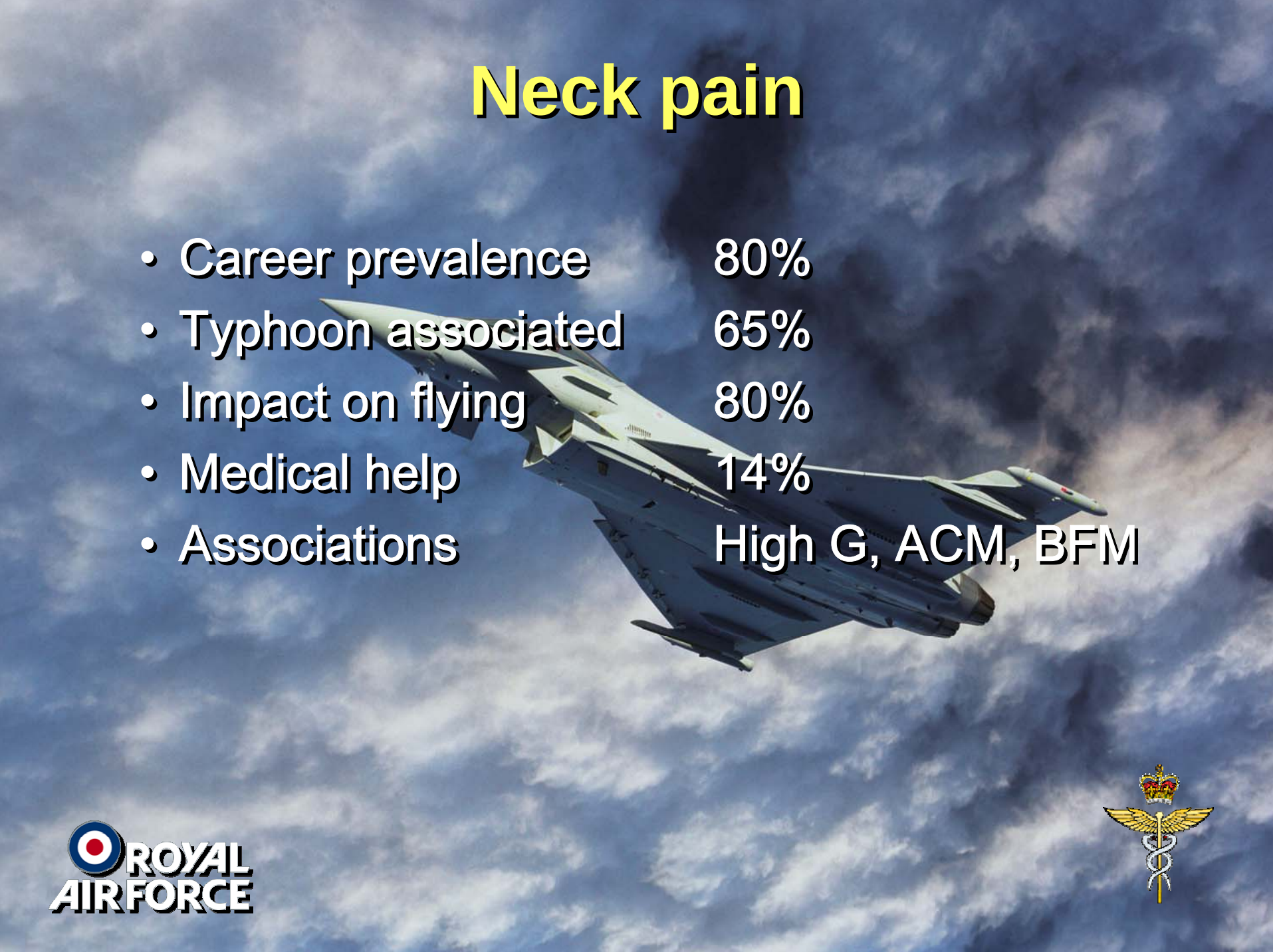
Survey

- 65% response (35 of 54 pilots)
- Mean age 33 (26 to 43)
- Mean fj hours 1827 (200 to 5000)
- Mean Typhoon hours 159 (10 to 420)

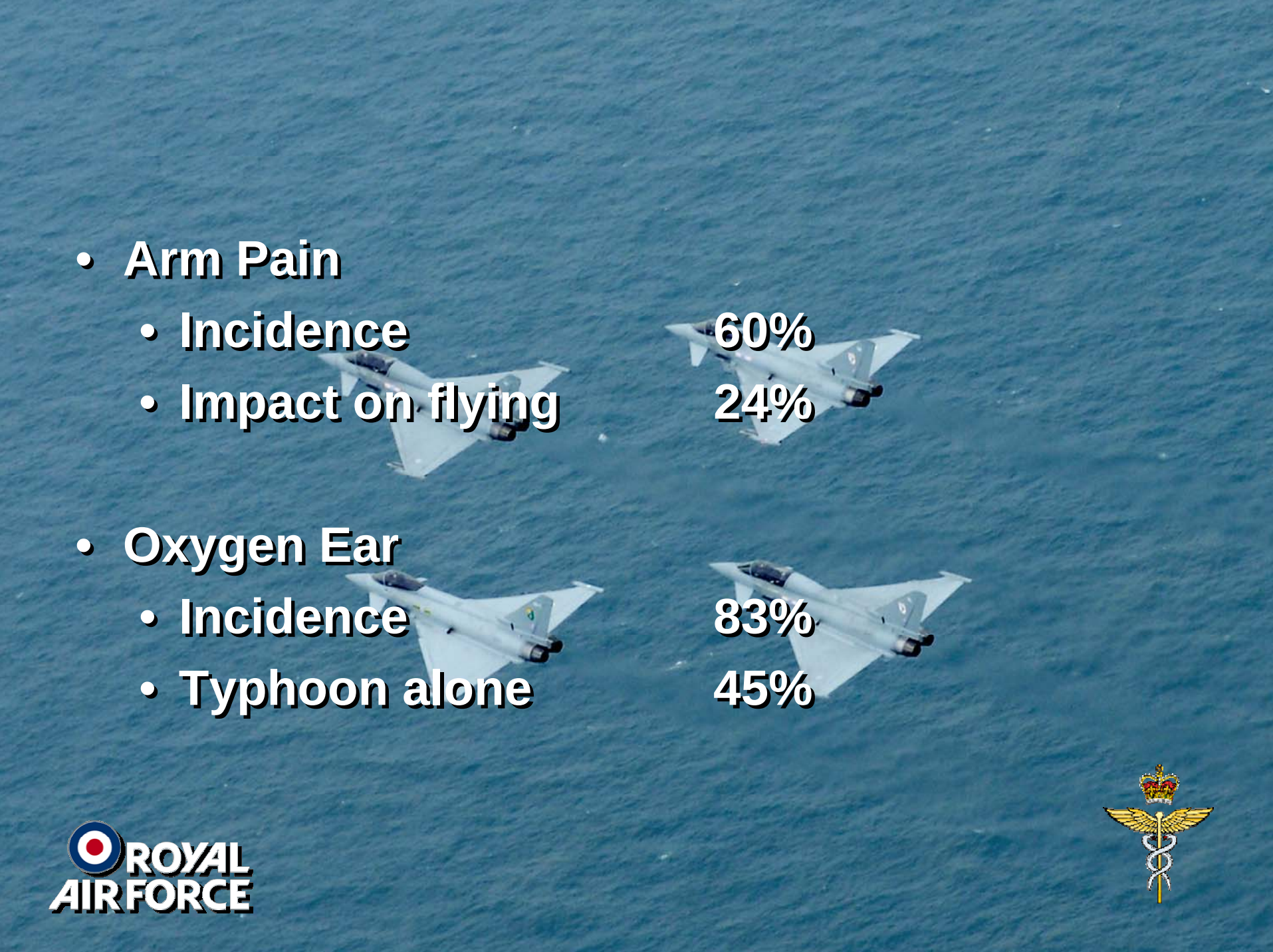
ROYAL AIR FORCE

Neck pain

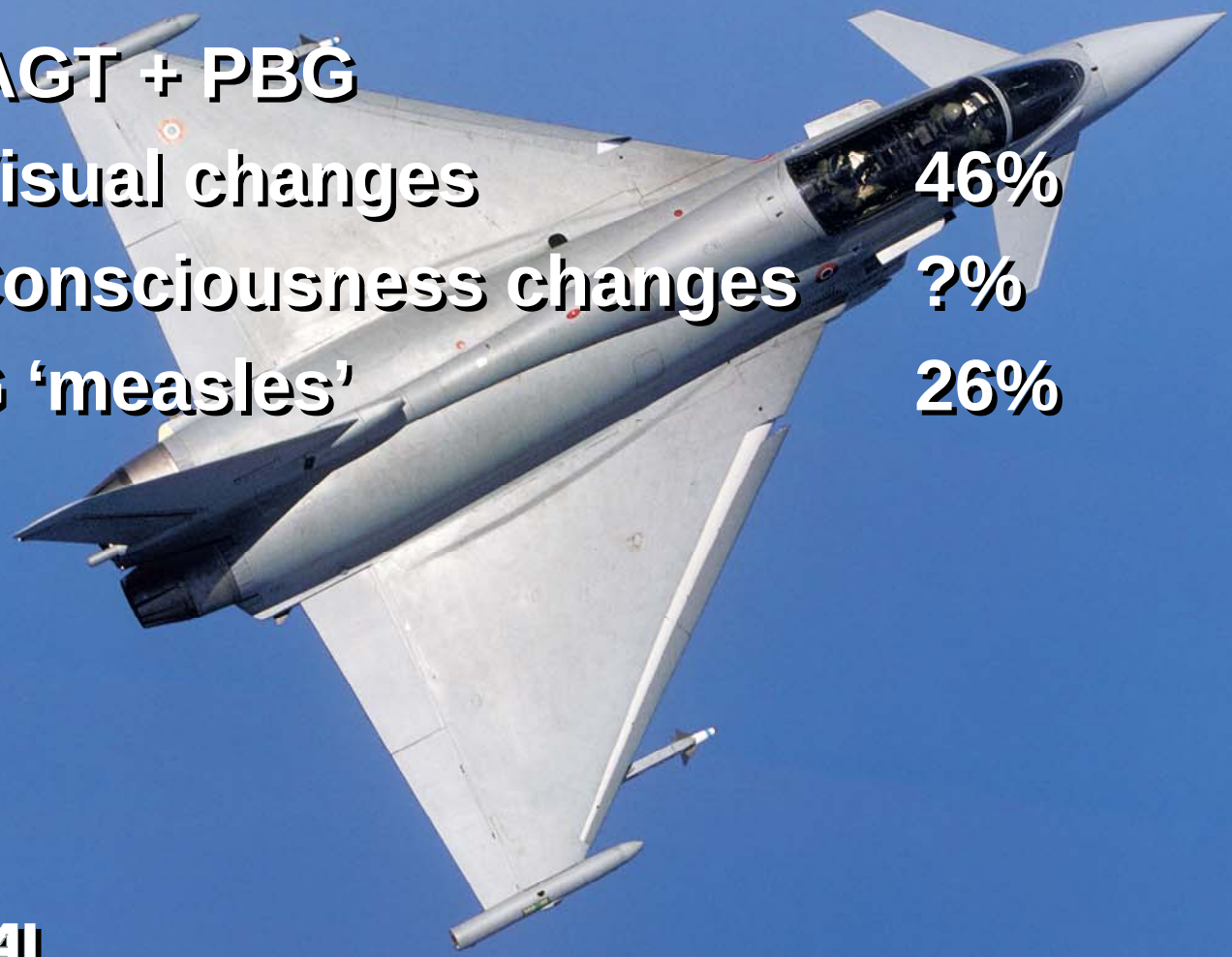
- Career prevalence 80%
- Typhoon associated 65%
- Impact on flying 80%
- Medical help 14%
- Associations High G, ACM, BFM



- Arm Pain
  - Incidence 60%
  - Impact on flying 24%
- Oxygen Ear
  - Incidence 83%
  - Typhoon alone 45%



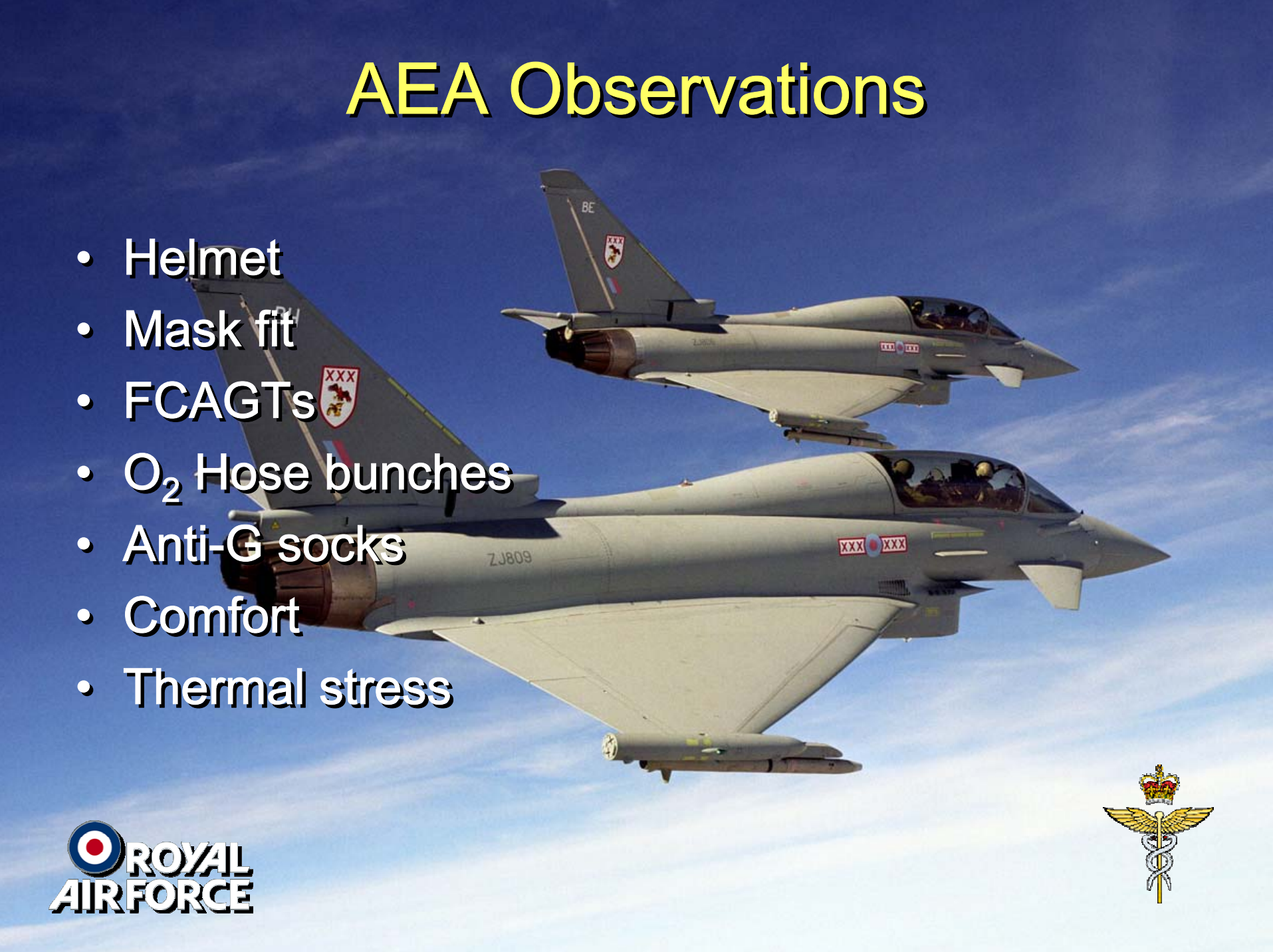
G Protection



- FCAGT + PBG
  - Visual changes 46%
  - Consciousness changes ?%
  - G ‘measles’ 26%

ROYAL AIR FORCE

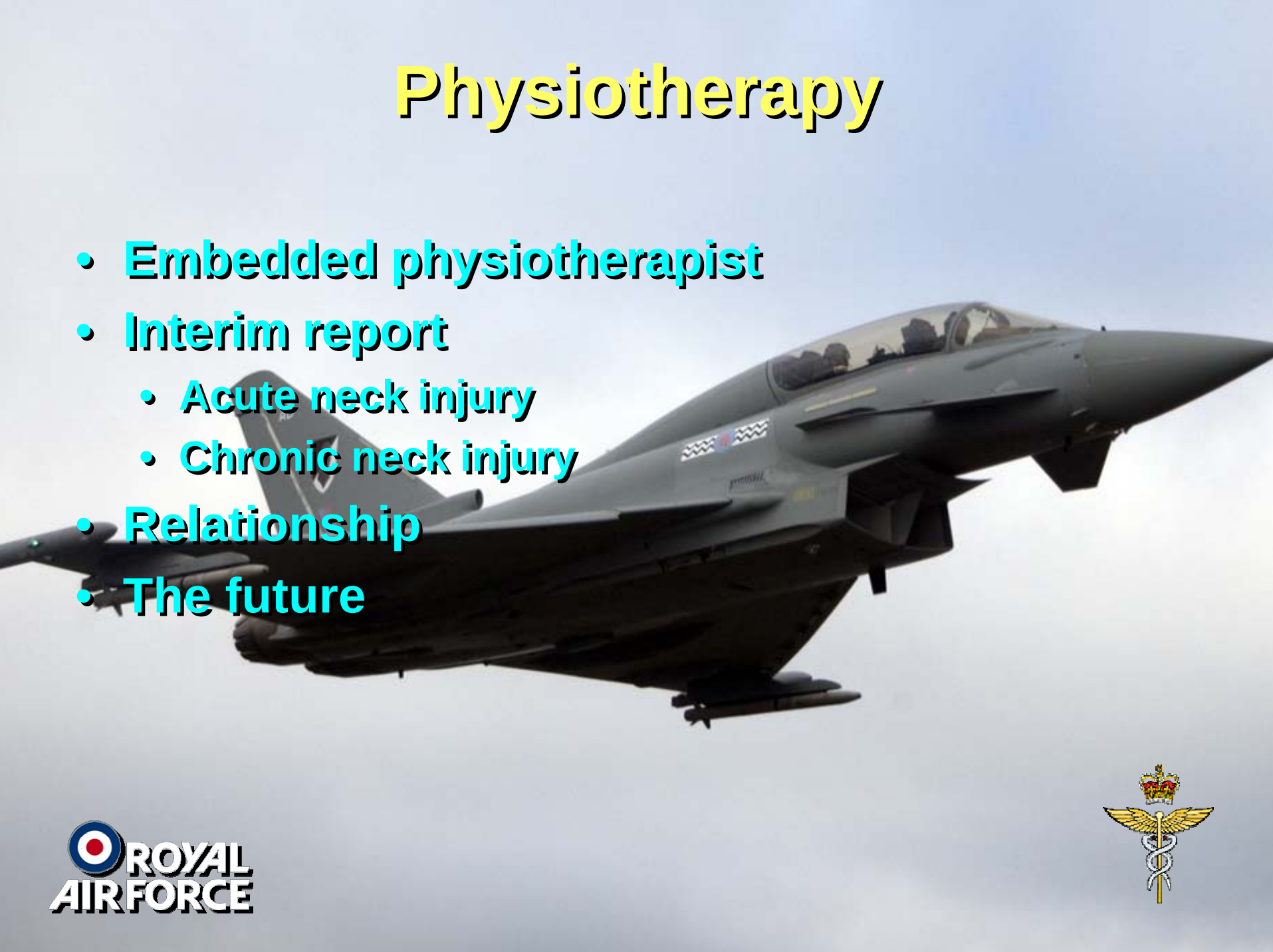
AEA Observations



- Helmet
- Mask fit
- FCAGTs
- O_2 Hose bunches
- Anti-G socks
- Comfort
- Thermal stress

ROYAL AIR FORCE

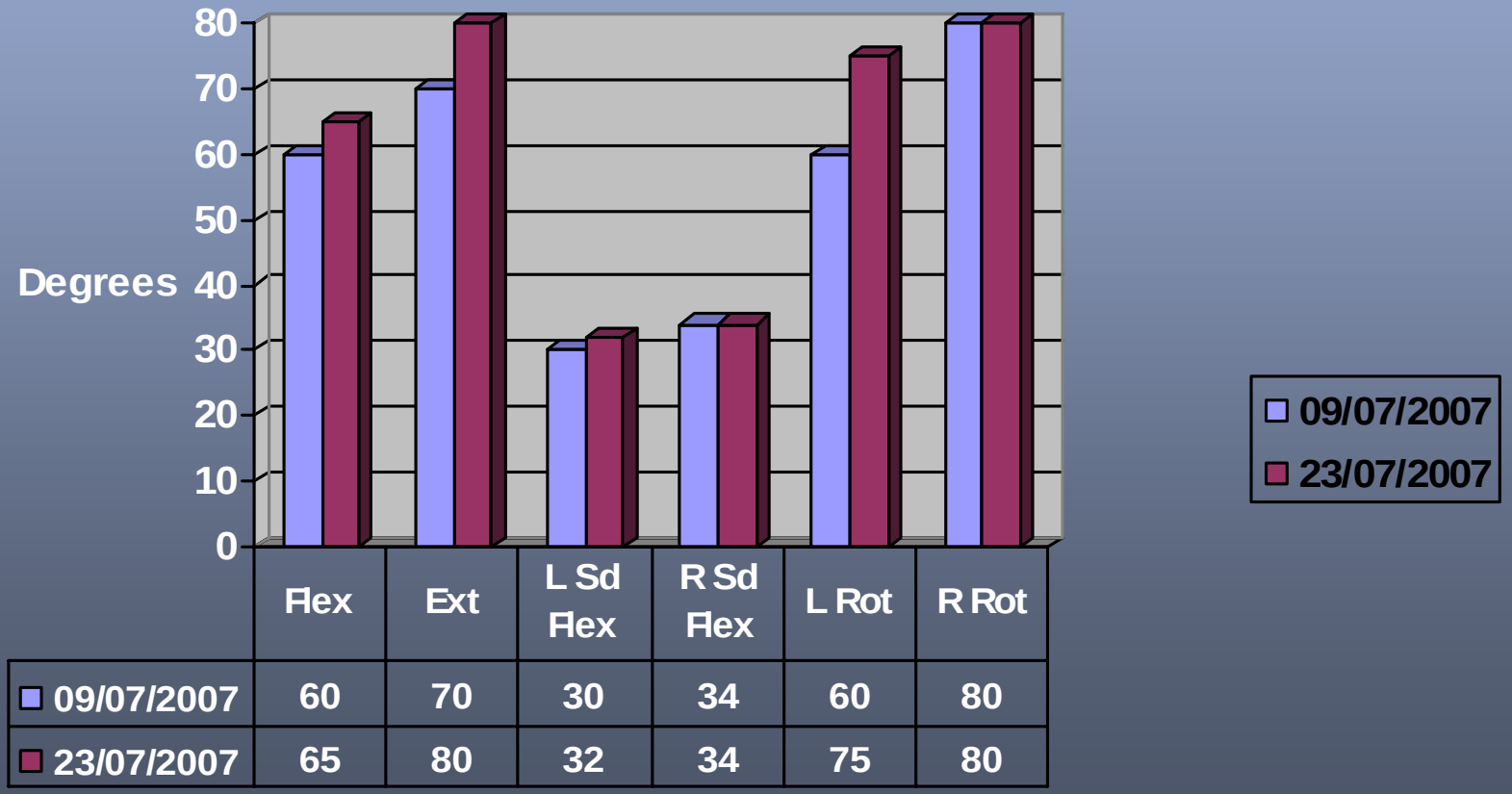
Physiotherapy



- Embedded physiotherapist
- Interim report
  - Acute neck injury
  - Chronic neck injury
- Relationship
- The future

ROYAL AIR FORCE

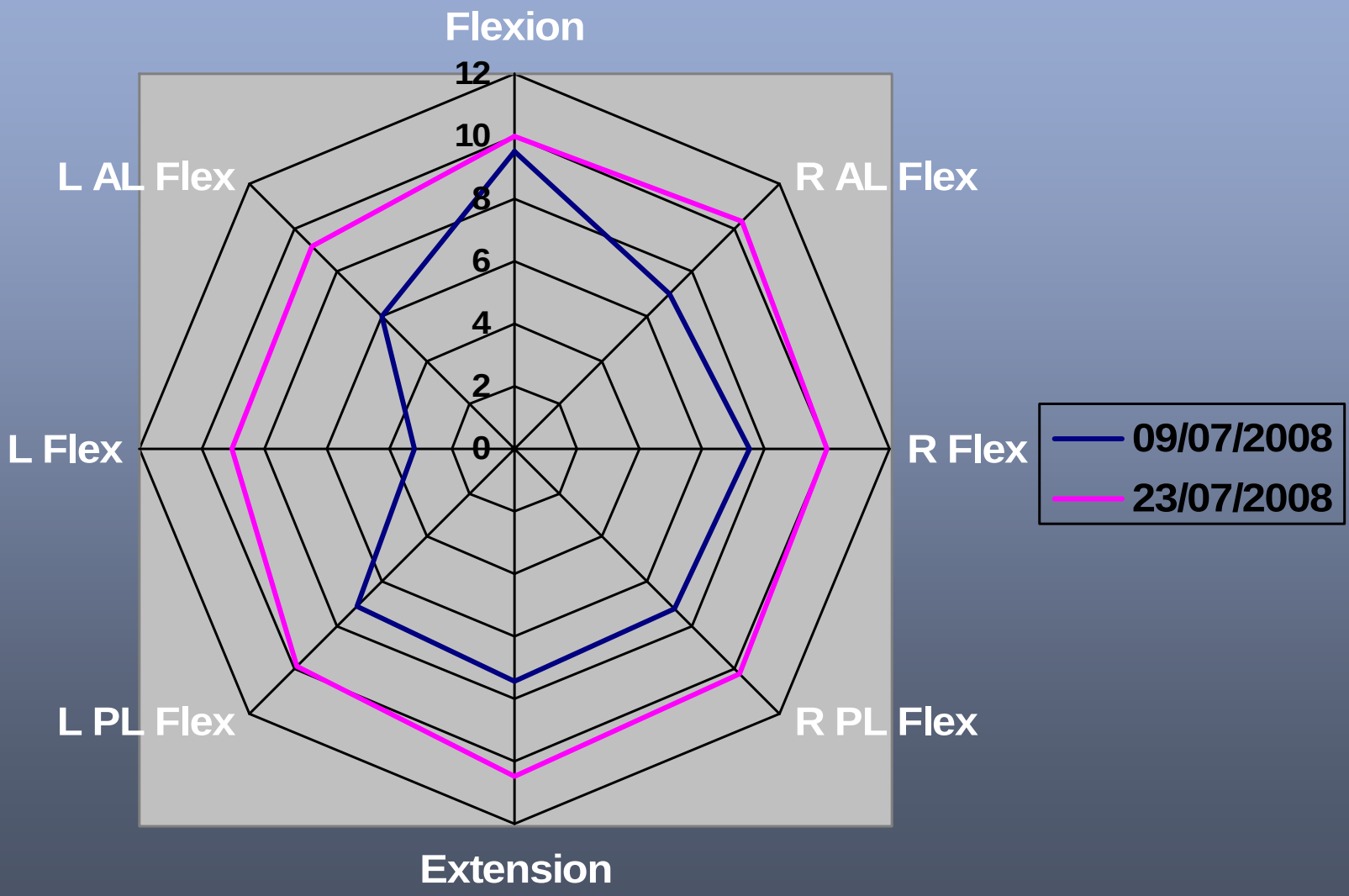
Neck Movement



	Flex	Ext	L Sd Flex	R Sd Flex	L Rot	R Rot
09/07/2007	60	70	30	34	60	80
23/07/2007	65	80	32	34	75	80

Neck Movement

Neck Strength



Neck Injury Working Group

- DDAvMed
- Command Flight Medical Officer
- SMO RAF Coningsby
- Aviation Medicine Consultant
- Lead Physiotherapist
- Typhoon Physiotherapist
- Consultant in Rehabilitation Medicine
- Physical Education staffs

ROYAL AIR FORCE

Arm Pain

Arm Pain

- AEA allows aircrew to sustain up to +9G_z
- Severe forearm pain
  - Studies on forearm pain and blood flow at increased vascular transmural pressure
  - Transmural pressure > 140mmHg caused autoregulation failure
  - Large increase in blood flow
  - Pain associated with ↑blood flow
  - Worsened if resistance vessels pre-dilated
  - Postulated that pain was` due to vascular stretch

ROYAL AIR FORCE

Arm Pain

- Little scope to ameliorate arm pain by modification of in-service AEA
- Limb counter pressure?
- Incidence 60%
- Impact 15%

Questions

ROYAL AIR FORCE