

Chapter 3 – MILITARY CRS POLICY

3.1 MILITARY POLICY ON REFRACTIVE SURGERY

NATO member states have differing policies on refractive surgery for their Armed Forces, reflecting varied levels of military health provision. One of the drivers for military policy has been that incorrect procedure choice could jeopardise the operational effectiveness of military personnel. For example, an early refractive surgery technique called Radial Keratotomy (RK) involving radial incisions in the cornea, which caused visual acuity to become unstable at altitude. It was deemed incompatible with military service. There is a need for coherent, logical military policies with respect to refractive surgery. This report provides a general overview of military refractive surgery policy among NATO member states.

3.1.1 Member State Policies

For each member state, a summary of current attitudes to refractive surgery is given below. Please note that policies for recruitment may differ from those for retention of serving personnel. Moreover, there is frequently a difference between general military service and Special Forces or aviators, as the visual performance requirements are frequently considered to be higher in the latter groups.

Table 3-1: Techniques and Technologies per Member State: Belgium.

| Technique | General Military Service (Special Forces, Aircrew and ATC ¹ Included) | Aviators (Pilots) |
|--|--|----------------------------|
| PRK | Yes | Not allowed for applicants |
| LASEK | Yes | Not allowed for applicants |
| LASIK | Yes | Not allowed for applicants |
| Thermokeratoplasty/ Conductive keratoplasty | Yes | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | Yes | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | Not allowed for applicants |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | Not allowed for applicants |
| Wavefront measurement | Yes | Not allowed for applicants |
| Femtosecond laser | Yes | Not allowed for applicants |

¹ Policy for ATC: ESARR 5 (**Eurocontrol Safety Regulatory Requirement**): EMCR(ATC) 13.1.5: After refractive surgery, applicants may be considered fit provided that:

- a) Pre-operative refraction was less than +5 or -6 dioptres;
- b) Satisfactory stability of refraction has been achieved; (less than 0,75 dioptres variation diurnally);
- c) Examination of the eye shows no post-operative complications;
- d) Glare sensitivity is within normal standards; and
- e) Mesopic contrast sensitivity is not impaired.

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Table 3-2: Techniques and Technologies per Member State: Canada.

| Technique | General Military Service / Special Forces ¹ | Special Forces / Aviators ² |
|--|---|---|
| PRK | Yes | Yes |
| LASEK/Epi-LASIK | Yes | Yes |
| LASIK | Yes | Yes |
| Thermokeratoplasty/ Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | Yes | Yes |

¹ LASIK is acceptable but PRK, Epi-LASIK and LASEK preferred.

² All procedures for serving aircrew to use wavefront guidance technology. Civilian applicants may use non-wavefront procedures but do so at their own risk and may not be accepted if ophthalmological evaluation determines they do not meet standards.

Table 3-3: Techniques and Technologies per Member State: Denmark.

| Technique | General Military Service / Special Forces | Aviators |
|---|--|-------------------------------|
| PRK | Yes | Yes ¹ |
| LASEK/Epi-LASIK | Yes | Yes ¹ |
| LASIK | Yes ² | No |
| Thermokeratoplasty / Conductive keratoplasty | No formal policy ³ | No |
| Intrastromal rings | No formal policy ³ | No |
| Multi-focal corneal ablations | No formal policy ³ | No |
| Clear lens extraction | No formal policy ³ | No |
| Phakic intraocular lenses | No formal policy ³ | No |
| Accommodative intraocular lenses | No formal policy ³ | No |
| Multi-focal intraocular lenses | No formal policy ³ | No |
| Wavefront measurement | No formal policy ³ | No formal policy ³ |
| Femtosecond laser | No formal policy ³ | No formal policy ³ |

¹ Only allowed for non-pilot aircrew. ² Not allowed for Special Forces.

³ Each case will be evaluated individually.

The Danish Armed Forces have no internal ophthalmological clinic or capability. Thus, policy only applies to decision making about medical clearance for entry or continuing military service. All treatment takes place outside the military.

Table 3-4: Techniques and Technologies per Member State: France.

| Technique | General Military Service | Special Forces / Aviator |
|--|--------------------------|--------------------------|
| PRK | Yes | Yes |
| LASEK/Epi-LASIK | Yes | Yes |
| LASIK | Yes | Yes |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | Yes | Yes |

Table 3-5: Techniques and Technologies per Member State: Germany (footnotes overleaf).

| Technique ¹ | General Military Service | Aviators ² |
|--|--------------------------|---|
| PRK | Yes | Yes |
| LASEK/Epi-LASIK | Yes | Yes |
| LASIK | Yes | Yes Jet pilots must have a residual stromal thickness of 425 µm (325 µm for helicopter and transport pilots) |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | Yes | No High myopia is incompatible with career as an aviator |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | Yes | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | Yes | Yes |

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¹ Refractive surgery is medically accepted; however, it is not performed at military medical facilities. Payment by the government is only possible by strict medical indication. Generally, refractive surgery is allowed when performed in civilian facilities at the members' expense. Military members are temporarily unfit for duty for several military activities for one year following surgery and must undergo an examination by a military ophthalmologist prior to return to duty.

² All refractive surgery is disqualifying for flying. Waiver is possible by the German Air Force Institute of Aviation Medicine. Refractive surgery for active duty pilots is generally not allowed. Case-by-case recommendations for pilot training applicants may granted by the German Air Force Institute of Aviation Medicine.

Table 3-6: Techniques and Technologies per Member State: Greece.

| Technique | General Military Service | Aviators |
|---|--------------------------|------------------|
| PRK | Yes | Yes ¹ |
| LASEK/Epi-LASIK | Yes | Yes ¹ |
| LASIK | Yes | Yes ¹ |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | Yes | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | No |
| Femtosecond laser | Yes | No |

¹ Cadets of the Air Force Academy are allowed any form of refractive surgery (LASIK or PRK). The Air force does not pay for expenses. After surgery examination at the center of aviation medicine is required. 20/20 vision in each eye and maximum spherical equivalent of -1,0 diopters are allowed to fly. Review of LASIK/PRK policy for pilots is pending.

Table 3-7: Techniques and Technologies per Member State: Italy.

| Technique | General Military Service / Special Forces | Aviator |
|---|--|---------|
| PRK | Yes | Yes |
| LASEK/Epi-LASIK | Yes | Yes |
| LASIK | Yes | Yes |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | Yes | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | No | Yes |

Table 3-8: Techniques and Technologies per Member State: Netherlands.

| Technique | General Military Service | Special Forces / Aviators ¹ |
|---|--------------------------|--|
| PRK | Yes | Yes ¹ |
| LASEK/Epi-LASIK | Yes | Yes ¹ |
| LASIK | Yes | No |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | No |
| Femtosecond laser | Yes | No |

¹ If pre-laser refractive myopia does not exceed -6.0 diopters (JAR3 class 1) and does not exceed -8.00 diopters (JAR3 class 2). In general hyperopia treatments are discouraged.

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Table 3-9: Techniques and Technologies per Member State: Norway.

| Technique | General Military Service | Special Forces / Aviators |
|---|---------------------------------|---|
| PRK | Yes | Yes Not approved for pilots |
| LASEK/Epi-LASIK | Yes | Yes |
| LASIK | Yes ¹ | No LASIK is only permitted in medical crewmembers |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | Yes After careful evaluation | No May be waived |
| Phakic intraocular lenses | Yes After careful evaluation | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | Yes | Yes |

¹ LASIK is not permitted in navigators in the Norwegian Navy.

Surface ablation is preferred refractive surgery procedure. Pre- and post-operative evaluations are required. Refractive surgery for hyperopia is not approved in the Norwegian Air Force.

Table 3-10: Techniques and Technologies per Member State: Portugal.

| Technique | General Military Service (aircrew included) / Special Forces | Aviators |
|---|--|----------|
| PRK | Yes Case-by-case basis | No |
| LASEK/Epi-LASIK | Yes Case-by-case basis | No |
| LASIK | Yes Case-by-case basis | No |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | Yes Case-by-case basis | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | No |
| Femtosecond laser | Yes | No |

Table 3-11: Techniques and Technologies per Member State: Slovenia.

| Technique | General Military Service ¹ | Special Forces / Aviators |
|---|---------------------------------------|---------------------------|
| PRK | No | No |
| LASEK/Epi-LASIK | No | No |
| LASIK | No | No |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | No | No |
| Femtosecond laser | No | No |

¹ Due to size of the Slovene Armed Forces, civilian institutions are used for military referrals if needed.

Table 3-12: Techniques and Technologies per Member State: Spain.

| Technique | General Military Service ¹ (Special Forces, Aircrew and ATC ² Included) | Aviators |
|---|---|----------------------------|
| PRK | Yes | Not allowed for applicants |
| LASEK/Epi-LASIK | Yes | Not allowed for applicants |
| LASIK | Yes | Not allowed for applicants |
| Thermokeratoplasty / Conductive keratoplasty | Yes | No |
| Intrastromal rings | Yes | No |
| Multi-focal corneal ablations | Yes | No |
| Clear lens extraction | Yes | No |
| Phakic intraocular lenses | Yes | Not allowed for applicants |
| Accommodative intraocular lenses | Yes | No |
| Multi-focal intraocular lenses | Yes | Not allowed for applicants |
| Wavefront measurement | Yes | Not allowed for applicants |
| Femtosecond laser | Yes | Not allowed for applicants |

¹ Policy states that “refractive surgery” may be accepted depending on results.

² Policy for ATC: ESARR 5 (Eurocontrol Safety Regulatory Requirement): EMCR(ATC) 13.1.5: After refractive surgery, applicants may be considered fit provided that:

- a) Pre-operative refraction was less than +5 or -6 dioptres;
- b) Satisfactory stability of refraction has been achieved (less than 0,75 dioptres variation diurnally);
- c) Examination of the eye shows no post-operative complications;
- d) Glare sensitivity is within normal standards; and
- e) Mesopic contrast sensitivity is not impaired.

Table 3-13: Techniques and Technologies per Member State: Sweden.

| Technique | General Military Service ¹ | Special Forces / Aviators |
|--|---------------------------------------|---------------------------|
| PRK | No | No |
| LASEK/Epi-LASIK | No | No |
| LASIK | No | No |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No | No |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | No | No |
| Femtosecond laser | No | No |

Table 3-14: Techniques and Technologies per Member State: United Kingdom.

| Technique | General Military Service | Special Forces / Aviators |
|--|--|---|
| PRK | Yes ¹ | Yes ² |
| LASEK/Epi-LASIK | Yes ¹ | Yes ² |
| LASIK | Yes ¹ | Yes ² |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No ¹ | No ² |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | No Intraocular surgical procedures are a bar to entry | No Having undergone non-approved procedures to appear before Medical Board |
| Phakic intraocular lenses | No | No |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | No | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | Yes | Yes |

¹ Case-by-case basis and subject to single Service requirements.

² For specialist employment unless specifically approved by single Service authorities.

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Table 3-15: Techniques and Technologies per Member State: United States.

| Technique | General Military Service | Special Forces / Aviators |
|---|---|---|
| PRK | Yes | Yes |
| LASEK/Epi-LASIK | Yes | Yes |
| LASIK | Yes | Yes |
| Thermokeratoplasty / Conductive keratoplasty | No | No |
| Intrastromal rings | No | No |
| Multi-focal corneal ablations | No | No |
| Clear lens extraction | Yes Case-by case and only if retinal detachment risk is acceptably low | No |
| Phakic intraocular lenses | Yes, except US Air Force Case-by-case with careful screening | Yes, except US Air Force and pilots all branches Case-by-case with careful screening No chromophore lenses or monovision |
| Accommodative intraocular lenses | No | No |
| Multi-focal intraocular lenses | Yes | No |
| Wavefront measurement | Yes | Yes |
| Femtosecond laser | Yes | Yes |