Pilots' situation awareness during exposure to normobaric hypoxia

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Examine the influence of normobaric hypoxia on pilot*s* SA and performance of flight related procedures.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON48321

Source
ToetsingOnline

Brief title
Effect of hypobaric hypoxia on Pilots' SA

Condition

- Other condition

Synonym
Decreases partial pressure of oxygen, normobaric hypoxia

Health condition

Oxygen shortage in body tissue

Research involving
Human

Sponsors and support

Primary sponsor: Royal Netherlands Air Force, Centre for Man in Aviation
Source(s) of monetary or material Support: Ministry of Defence

Intervention

Keyword: Normobare Hypoxia, Pilots, Situation Awareness

Outcome measures

Primary outcome

The influence of normobaric hypoxia on helicopter pilots' situation awareness.

Secondary outcome

The pilots' self-perceived state of alertness

Study description

Background summary

During military helicopter operational flight pilots must maintain a high level of performance which is essential for flight safety and mission success. Hypoxia is an external stressor which is present (to a greater or lesser extent) during military helicopter flights where the use of supplemental oxygen at altitude is not common. While situation awareness (SA) was identified as an essential skill during operational flight, there is very limited data available concerning the influence of hypoxia exposure on pilots SA. In addition, to our knowledge there is no published literature that specifically examined the effect of hypoxia on pilots SA during simulated flight.

Study objective

Examine the influence of normobaric hypoxia on pilot*s* SA and performance of flight related procedures.

Study design

This study will be a counterbalanced, single blinded, within-subjects repeated measures design

Intervention

Two flights will be flown, in one the pilots will be breathing normal air (sea level) and in the other a gas mixture of 11.4% ± 1% oxygen. The equivalent altitude of this condition is calculated to be 15,000 feet (4572 meter). The

condition in which the pilots breath normal air is considered as control.

Study burden and risks

We expect the risks in the presnet study to the participating pilots to be very small. The pilots will be exposed to normobaric hypoxia (hypoxia that occurs without a reduction in barometric pressure). This technique has medical safety advantages because it eliminates risks * such as decompression sickness and inner ear problems * associated with an altitude chamber*s reductions in barometric pressures. Pilots of Royal Netherlands Air Force receive hypoxia training every five years. Therefore, they are familiar with the symptoms of hypoxia. In addition the pilots will not be exposed to extreme altitudes or additional risks compared to the normal hypoxia training they follow during their flight career. It is expected that during exposure to the simulated altitude the pilots can experience hypoxia related symptoms. However we expect the simptoms to venish after the pilots start breathing ambiant air.
Each pilot will spend a total of six hours participating in this study, this includes the familiarization and test sessions. The six hours are deviided over two days. Before and after each flight the pilots will fill in a short questionnaire containing a question regarding their level of alertness.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

1. Subjects are pilots of the Royal Netherlands Air Force
2. Male
3. Age 22-55
4. The pilots need to pass thier mandatory medical examination and be declaired "fit to fly"
5. Pilots need to have at least 3 years experience in the Apache helicopter back seat and have a minimal of 400 flight hours.

Exclusion criteria

1. Pilots exposed to altitudes higher than 8000 feet for a period longer than one week in the three months prior to the research.

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	29-10-2019
Enrollment:	16
Type:	Actual

Ethics review

Approved WMO Date:	15-07-2019
Application type:	First submission
Review commission:	METC Amsterdam UMC

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL68139.018.19