

NOVSPACE	DM-AZG-2022-en_ed1
Parabolic Flight Medical Document	MAJ 09/06/22



## MEDICAL DOCUMENT

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## You are about to take part in a parabolic flight.

Being in good health is required and a medical examination is mandatory.

Call your doctor, who is familiar with your condition, to examine you and complete the enclosed parabolic flight medical aptitude certificate. However, you can also contact an authorized aviation medical examiner or another doctor of your choice.

**Note to authorized aviation medical examiners:** this medical examination is not a “pilot” aptitude examination. EASA Class 2 certificates or national equivalent will not be accepted.

These flights last between 2 to 5 hours and the human body will undergo several variations in g-acceleration.

### Validity period:

2 years for people aged under 40 at the date of the medical examination

1 year for people aged 40 and over at the date of the medical examination

### Mandatory examination:

- For all: **an electrocardiogram less than a month old** at the date of the examination
- For people aged 65 and over: **an exercise ECG done less than a month** at the date of the examination

### You will find in the document:

- a letter to give to your doctor
- the parabolic flight medical aptitude certificate (**no other document will be accepted**)

**Please send the certificate duly completed** (in both case of aptitude or incapacity) **to:**

[oceane@airZeroG.fr](mailto:oceane@airZeroG.fr) (do not send any other medical documents or ECG to this address).

If your doctor does not grant aptitude or inaptitude but requests an evaluation from the parabolic flight medical commission to assess your medical fitness to participate to a parabolic flight (box C3 of the certificate), please send the certificate as well as the ECG and the medical summary form (see appendix 1) to the commission. See postal address in Appendix 1.

### For more information, please contact:

Océane LEGUTKE

AIR ZERO G / AVICO

+33 (0)1 58 61 27 27

[oceane@airZeroG.fr](mailto:oceane@airZeroG.fr)

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## Letter to the medical doctor

Dear Doctor,

Your patient wishes to take part in a zero-g flight (parabolic flight) on board Novespace's Airbus A310 ZERO-G. We need your opinion concerning your patient's medical aptitude to take part in this flight.

Your patient must produce **an ECG less than 1 month old at the date of your examination**. For people **aged 65 and over, an exercise ECG less than 1 month old** at the date of the examination is required. Your decision about the aptitude shall take into account the interpretation of the ECGs.

- **What is a parabolic flight?**

The aircraft flies at an altitude of 20,000 ft to 26,000 ft (pressure on board is similar to a commercial airliner). In flight, the pilots perform between 15 and 45 times a special maneuver by which the aircraft follows a parabolic trajectory, during which the passengers are in microgravity for 22 seconds. Each microgravity phase is preceded and followed by a hyper gravity phase, of 20 seconds each, where the passengers will be subjected to close to twice their weight (1.8g).

- **Is this activity hazardous and stressful?**

Similar to any aviation activity, this activity carries a risk. However, parabolic flights where weightlessness conditions are recreated have been carried out for many years, and no accident has been reported to this date.

As the flight includes acceleration changes between 0 and 2g, this activity generates fatigue, and increased fatigue in passengers prone to motion sickness (5 to 10% of passengers). However, in the United-States, children may take part in flights from the age of 8, and many senior citizens aged 80 and more have flown. In France, passengers are admitted **from the age of 18**. This activity may also be stressful, and rare instances of tetany have been observed (less than one in 1000 passengers).

- **What physical consequences may be expected?**

**During hyper gravity periods**, an initial decrease in systolic blood pressure and tachycardia occur. The cardiac workload increases by close to 70%, and transient cardiac conduction and heart rate disturbances have been observed (PVC in particular). At lung level, the work of breathing increases. When lying down, the passengers feel mild chest tightness. Repeated hyper gravity phases create fatigue.

Some passengers experience the symptoms of motion sickness, in particular if they fail to comply with the instruction to keep their head steady during aircraft accelerations. These passengers are then escorted to their seat, and in most cases the symptoms remain moderate and temporary.

**During microgravity phases**, shocks between passengers or against the cabin walls may occur, and although it is padded, falling to the cabin floor may be hard.

- **Deciding on whether a patient is fit/unfit**

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To help you decide if the patient may take part in parabolic flights, the table hereafter lists some disorders or conditions which may rule out or be cause to postpone parabolic flights or require a specialized opinion.

- **Upon completion of your examination, we suggest you make one of the following three decisions:**

**Fit:** Your patient is in good health, and any condition the patient may have will not, in your opinion, interfere in flight.

**Unfit:** Your patient has a condition which, in your opinion, will compromise his/her safety and health in flight.

**Not sure:** You cannot decide: In this case, you must complete the medical summary form for the candidate's evaluation by the medical commission of the parabolic flights (appendix 1), give it to the candidate with the certificate, ECG and any relevant medical document. The candidate will have to transmit them to the commission.

If necessary, the commission will contact you for further information and/or ask the candidate to take further examinations before taking the final aptitude decision.

After the review of the file, the parabolic flight medical commission will make the final decision.

- **Documents to give to your patient:**

At the end of your medical examination, you must provide the candidate with the attached certificate of aptitude and in the case of a request for an evaluation by the medical commission, please add the medical summary form (appendix 1), the ECG and any other medical document (medical report, complementary exam, etc.) necessary for the commission. If you have any questions relating to this medical procedure, or for additional information, please contact AIR ZERO-G / AVICO at +33 (0)1 58 61 27 27

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Thank you for your cooperation.  
Regards,

***The Novespace Team***

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## Conditions always **RULING OUT (RO)** the flight, causing the flight to be **POSTPONED (P)** or requiring compulsorily a **SPECIALIZED OPINION (SO)** of the parabolic flight commission

Cardiac	Heart failure <b>(RO)</b> . Coronary heart disease <b>(SO)</b> . Any Cardiac rhythm or conduction disorder <b>(SO)</b> . Abnormal ECG <b>(SO)</b> . CHD event or bypass < 6 months <b>(RO)</b> or more <b>(SO)</b> . Major <b>(RO)</b> , minor <b>(SO)</b> valvular anomaly Poorly controlled high blood pressure <b>(RO)</b> New blood pressure control treatment <b>(P)</b> Non-cardioselective beta blockers <b>(RO)</b> Accumulation of cardiovascular risks <b>(SO)</b>
Pulmonary	Respiratory failure <b>(RO)</b> Unbalanced asthma <b>(RO)</b> History of spontaneous pneumothorax not treated by pleural symphysis <b>(RO)</b>
Endocrine	Type 1 diabetes or Type 2 diabetes well equilibrated, with no cardiovascular complications <b>(SO)</b>
ORL	History or current pathology of inner ear especially any vestibular syndrome or vestibular disease <b>(RO)</b> Severe hearing loss preventing the candidate from hearing the crew's messages <b>(SO)</b>
Othopedics- Rheumatologic	Any motor disability <b>(SO)</b> Any condition impairing bone density <b>(RO)</b> Evolutive osteo-articular pathology, or abnormality which may be made worse by a fall <b>(SO)</b>
Ophthalmologic	Severe visual impairment <b>(SO)</b> Severe myopia or retinal detachment history <b>(SO)</b>
Hematologic	Bleeding disorder, anticoagulant treatment <b>(RO)</b>
Psychiatric	Psychosis <b>(RO)</b> Mental disability <b>(RO)</b> . Debilitating anxiety, panic attacks, claustrophobia, fear of flying, fear of heights <b>(RO)</b>
Neurological	Epilepsy <b>(RO)</b> , debilitating neurological diseases <b>(RO)</b> History of stroke or TIA <b>(SO)</b> Migraine attacks <b>(P)</b>
Gastroenterology	Unhealed peptic ulcer <b>(RO)</b> Untreated or persistent GERD under treatment <b>(RO)</b> Large hernia <b>(RO)</b>
Others	Any recent surgery (<3 months) <b>(SO)</b> . Alcoholism <b>(RO)</b> . Drug consumption <b>(RO)</b> Use of medicines with bothersome adverse effects <b>(RO or P)</b> Pregnancy <b>(P)</b>

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## Parabolic flight medical aptitude certificate

**Note: The certificate will be considered not valid if the boxes A1 or A2; B1 or B2; C1 or C2 or C3 and D1 or D2 are left blank.**

**Schedule date of the parabolic flight:** .....

Name of the patient: Mr. /Ms: (first/last name) .....

Date of birth: ..... (DD/MM/YYYY) Place of birth:.....

I, undersigned, Doctor .....

Address:.....

**A1** ☐ treating physician (when this person has designated no treating physician, I hereby certify that I have been seeing him/her on a regular basis for over a year, or [for those countries where this is possible] I hereby certify that I have had access to this person's complete medical record)

**A2** ☐ Authorized Medical Examiner, Holder of Aeromedical Examiner approval n° .....

Certify that my patient:.....

**B1** ☐ had a normal routine electrocardiogram less than a month ago on: ...../...../.....

**B2** ☐ (if aged 65 and over) had a normal exercise ECG less than a month ago on: ...../...../.....

**C1** ☐ is FIT to participate in this activity.

The candidate sends only this certificate (**no ECG, no Appendix 1**) to [oceane@airZeroG.fr](mailto:oceane@airZeroG.fr)

*Subject to change in his/her state of health, which would void this certificate, this certificate for parabolic flight is valid for two years for patients less than 40 years old on the date of the examination, and one year for patients more than 40 years old on the date of the examination.*

**C2** ☐ is UNFIT to participate in this activity.

The candidate sends only this certificate (**no ECG, no Appendix 1**) to [oceane@airZeroG.fr](mailto:oceane@airZeroG.fr)

**C3** ☐ I cannot decide on my patient's medical aptitude and I request an evaluation by the parabolic flight medical commission (see table on page 5 regarding the pathologies requiring the opinion of the commission). **To this end, I fill out Appendix 1 and give it to my patient to be sent with this certificate, the ECG, and any medical document useful for the evaluation, to the postal address shown on Appendix 1**

**D1** ☐ has no contraindication to motion sickness medicine with potential anticholinergic or antihistaminic effects that may be delivered by Novespace.

**D2** ☐ has contraindication to motion sickness medicine with potential anticholinergic or antihistaminic effects (**example: glaucoma, prostatic adenoma**).

Place and date (DD/MM/YYYY):

Physician's signature and stamp:

*Reserved*

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## Appendix 1: Medical summary form

(to be completed by the medical doctor **only if an evaluation is requested** -box C3 of the certificate)

First name:	Last name:	Date of the planned parabolic flight:
Date of birth:	Phone number:	Usual sports practice:
Height (cm):	Weight (kg):	
Address:	Email:	
Past or current medical condition motivating the question of parabolic flight aptitude:		
Details about this medical condition:		
Additional examination results (specialized opinion if available):		
Other past or current medical condition known. Remarks:		
Current treatment:	Doctor's stamp, Email, phone number:	
<p>The candidate must send this document as well as the medical certificate, the ECG and any other medical document considered useful to the medical commission of parabolic flight by post mail to the following address, with the mention "medical confidentiality":</p> <p style="text-align: center;">Anne-Clotilde Duchesne Novespace 2 place Maurice Quentin 75039 Paris Cedex 01 France</p>		