

# Fitness Program Basics



## General Overview



# Overview

## INTRODUCTION

Spaceflight is a high-energy activity that exerts a number of physical and mental stresses on human participants.

By reviewing the basics of spaceflight and the stresses spaceflight imposes upon participants, the role and potential benefits of preflight fitness conditioning will be made clear.



## WHAT IS SPACEFLIGHT?

Spaceflight is the process of launching, via spacecraft, from the Earth's surface and out of the majority of the planet's atmosphere. There are a number of different ways to achieve spaceflight, but most involve the use of rocket engines to thrust a space capsule or spaceplane to an altitude of greater than 50 miles.

The physical stresses involved in this process include extreme acceleration (launch) followed by free-fall (microgravity) and extreme deceleration (reentry), which affect the cardiovascular system, sense of orientation and locomotion.

## CAN I FLY TO SPACE?

With only a few exceptions, the answer is a resounding "yes!"

Ordinary men, women, and adolescents are in nearly all cases physically able to withstand the rigors of spaceflight. However, a participant's enjoyment will depend greatly upon fitness level. While one does not need to be an athlete to enjoy a spaceflight, taking a little time to enhance cardiovascular health and physical strength prior to a flight will greatly help to improve the quality of the experience and **maximize your time in space.**





# Stresses of Spaceflight

## PHYSICAL STRESS

One of the primary physical stresses of spaceflight is a result of **extreme acceleration**. You may have heard this referred to as “**g-forces**,” which relates the feeling of acceleration to the feeling of gravity pulling toward the Earth.



For example, if one were to accelerate quickly enough so that the feeling of being pushed back into a seat was twice as strong as the force of gravity pulling down, that would be called experiencing two “g’s” of force backward, or in the “g-x” direction. Most spaceflights will involve the experience of many g’s of force, which affects the ability of participants to comfortably function and move.



## DISORIENTATION

Because our bodies are adapted to conditions on Earth, we rely on gravity for a sense of orientation and up-and-down. However, once nearing apogee (the highest point in a suborbital flight) or achieving full orbit (perpetual free-fall around the Earth,) spaceflight participants enter a condition of apparent weightlessness called “**microgravity**,” where what the eyes see and what the inner-ear experiences may conflict, leading to disorientation.

In extreme cases, this effect may lead to **space motion sickness**, or SMS.

At a cost of many thousands of dollars per minute, time spent recovering from the physical strain of spaceflight is costly both in terms of money and the overall spaceflight experience, which preflight fitness training may help to reduce.





# Stresses of Spaceflight



## MENTAL STRESS

Many feel traveling to be a stressful experience under ordinary circumstances. Spaceflight, as an unfamiliar, high-speed, high-energy, high-cost experience, may be considered an even greater source of travel stress, even if only at the subconscious level. This may lead to reduced attentiveness, distraction, and at the very least, reduced enjoyment of the spaceflight experience.

## PREFLIGHT ANXIETY

In addition to the mental stress involved in space travel, the knowledge that spaceflight is a potentially high-risk activity involving a healthy degree of physicality may inspire unwanted feelings of anxiety.

Increased physical strength and improved cardiovascular health will help participants to manage mental stress, while regular exercise can actively reduce mental stress and anxiety. Further, training prior to a spaceflight will help to develop a sense of preparedness, which will ease feelings of stress and anxiety.



**In helping spaceflight participants to manage and reduce both physical and mental stresses, preflight fitness training represents a significant value added to the substantial investment represented in securing a spaceflight.**





# Training Options

All participants in an Astrowright fitness program will be delivered an at-home, portable **TRX Suspension Training System** for personal use. As a truly customized fitness experience, Astrowright instructors will then utilize the strength, cardiovascular, and balance exercise techniques **most convenient for your fitness and comfort level**, whether this involves designing simple, at-home resistance exercises or setting up workouts that may be performed in the office or hotel.

## DISTANCE TRAINING

The primary method of delivery for Astrowright's fitness training is via Internet video, which requires no travel and affords maximum flexibility to incorporate training into your daily routine.

Requirements for participation in this training program are simply an Internet connection, a video-enabled computer or smartphone (with camera), and access to internet video software or applications (e.g., Skype).



## IN-PERSON TRAINING

For those seeking more hands-on training, contact our representatives for in-person training options at our headquarters in Las Vegas, NV.

Enhanced fitness packages, including the use of local, state-of-the-art fitness and wellness facilities, are available upon request. Additionally, customized programs for larger groups, corporations, or institutions are also available.

Please direct inquiries to [info@astrowright.com](mailto:info@astrowright.com).





## Training Products



### WHAT DO I GET?

Included with all Astrowright fitness packages is a **TRX Suspension Training Pro Kit** and **Door Anchor** for personal use, with a **customized, at-home fitness plan** developed specifically as a result of our initial consultations with you and based on your level of physical fitness, health history, and spaceflight fitness goals.

This plan includes a list and description of specific assigned exercises, tips and notes on how best to perform them, and a schedule developed to help you reach your fitness goals prior to your flight.

Also included is a packet of **spaceflight reference material** intended to assist in the preparation of your own experience, along with an **Astrowright fitness tee**, (suitable for use on or off world.)

Finally, for those seeking additional spaceflight preparedness credentialing, participation in an Astrowright fitness program qualifies participants to **test for Flight Readiness Status (FRS)**.

FRS certification is geared toward spaceflight professionals and incorporates cognitive tests with industry-standard fitness benchmarks to demonstrate a certificate-holder's ability to withstand the physical and mental rigors of spaceflight while performing thoughtful, complex tasks.







## For More Information

### TRAINING INFO, SCHEDULING & PURCHASING

For more information about the **TRX Suspension Training System**, Astrowright fitness plans, or other Astrowright services, visit our website at [www.astrowright.com](http://www.astrowright.com).

To purchase/schedule your preflight fitness training, please email us at [info@astrowright.com](mailto:info@astrowright.com), or email our fitness director directly at [ashley.boron@astrowright.com](mailto:ashley.boron@astrowright.com).

Contact us today, and let Astrowright help you get fit to fly!

