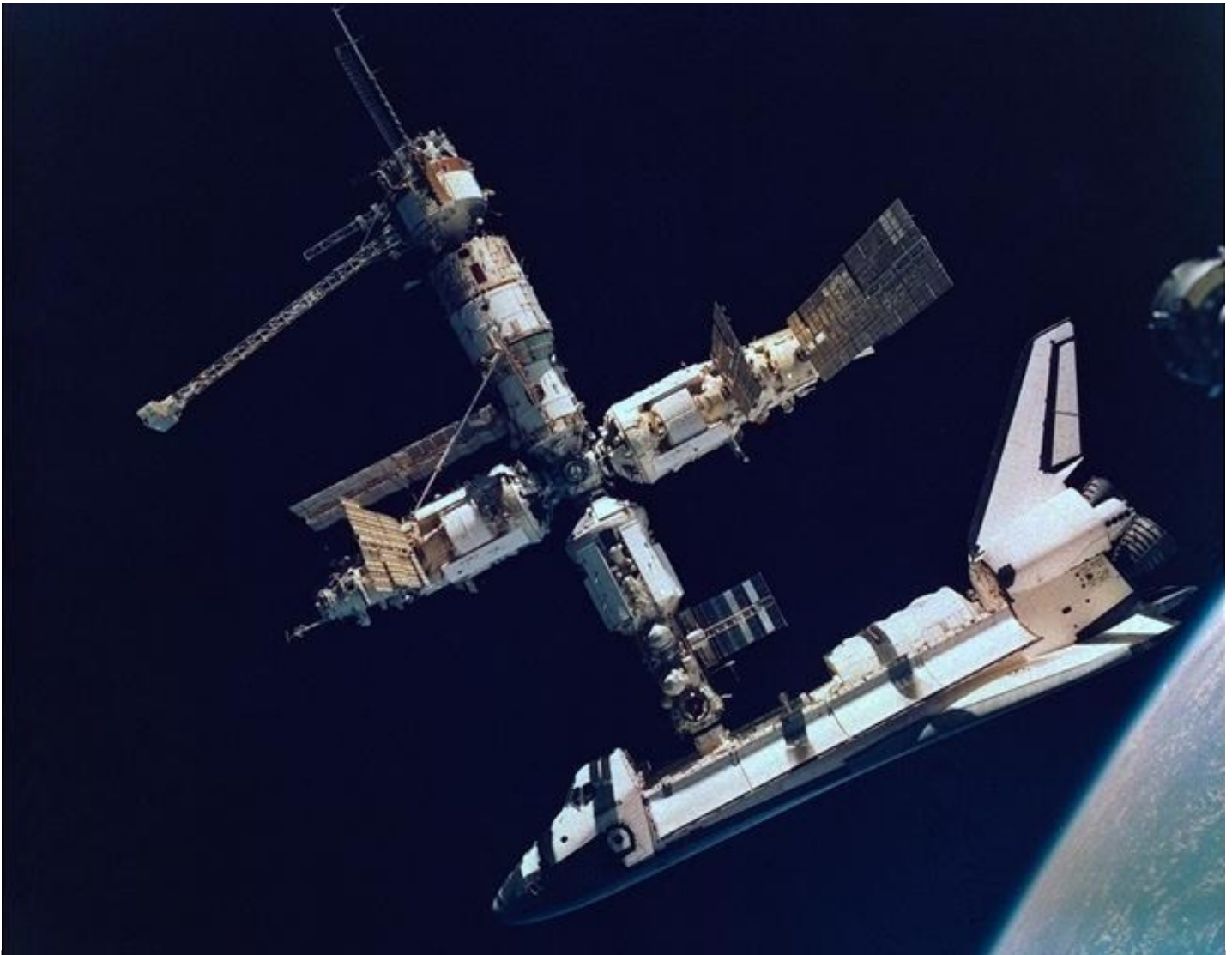


<http://library.thinkquest.org/C003763/index.php?page=adapt01>



Humans have been living in space for long durations on board the Space Shuttle and the Mir Space Station both pictured here. Courtesy NASA.

For nearly forty years, mankind has maintained a presence in space. We have progressed from satellites to space stations, from voyages lasting one hundred and eight minutes to lasting over a year, and all in the matter of a few decades. If space exploration continues at this rate, who knows where we will be in another half-century?

The manned exploration of space poses many technological challenges. One of the most important challenges to overcome is living in a weightless environment. How are humans effected by weightlessness? Living in microgravity triggers certain physiological adaptations such as a loss of bone density and muscle atrophy. The mind is also effected by the various stresses and strains imposed upon humans in space.



Living in Space

Introduction

<http://library.thinkquest.org/C003763/index.php?page=adapt01>

Fortunately there are countermeasures that can be taken to combat the mental and biological changes that result from exposure to weightlessness. Things such as diet, exercise and even drugs can all counteract the effects of zero gravity to a certain extent. However, these effects can be avoided altogether by simulating gravity in space. Artificial gravity can be created by applying some basic rules of physics to spacecraft. With artificial gravity, the duration of space missions could increase drastically without sacrificing human health.

Knowing all the hardships and challenges that must be faced in space, what makes a person ideal to face them? What skills are necessary to become an astronaut? What traits and characteristics are ideal in astronauts?

This section of Astrobiology: The Living Universe covers the human factors of space exploration.

Physiological effects

The weightless environment of space is drastically different from what humans are used to on Earth. Learn about how the body adapts to zero gravity!

The Ideal Astronaut

Many people aspire to become astronauts. After all, what could be a more exciting career than being a space pioneer? The Ideal Astronaut discusses what it takes to become an astronaut.

Psychological effects

Living in space can truly be a mind-altering experience. Astronauts must deal with a number of stresses in space. Find out more about the circumstances astronauts must face in space and how they cope mentally with the challenge.

Artificial Gravity

One way of alleviating the negative effects of weightlessness on the human body is to eliminate weightlessness entirely by simulating gravity. Read about how it is done in Artificial Gravity!

Countermeasures against Zero-G

The adverse physiological effects of living in microgravity can be avoided completely by simulating gravity in space. Countermeasures against Zero-G explains how artificial gravity is created on spaceships.