Chapter 12
The Health of Female Astronauts:
Understanding the Risks and Building Strategies for a Safe Journey for All

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ABSTRACT

There is vast scientific literature on the physiological changes astronauts experience during space travel. However, there is a gap in female astronauts' health risks. This

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gap has gradually been filled with the increase in missions in which women participate, even though they are subject to increased risks compared to men due to the lack of well-tested parameters. This chapter aims to map the breadth of evidence available on the correlation between female health susceptibility on Earth and the increased risk in space. We discuss the results of a systematic scoping review we performed for articles relevant to gender and health risks in space. Diseases associated with oxidative stress and inflammation are the risks in women astronauts. Researching and better understanding the relationships between these risks and the space environment is essential to designing new ways to support women's lives on space missions. This knowledge can also contribute to new therapeutic strategies for women on Earth.

INTRODUCTION

> *"Yet, there is considerable traffic between Earth and space, not only in terms of shuttle and satellite missions but also symbolically via flights of imagination" (Casper & Moore, 1995)*
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> *… it is the great and endless conversation of women. It seems like nothing; that is what men think; they do not even imagine that this conversation is what holds the world in its orbit; if it were not for women talking to each other, men would have the meaning of the house and the planet" (Saramago, 1996) p109.*

We live in an era of revival of the space imagination: space travel is once again among the desires of wealthy adults (or those who wish to be adults and wealthy) and dreamy children looking forward to becoming astronauts. Space travel is once again desirable for scientists who wish to test their hypotheses and samples in the inhospitable and interesting space environment: decreased gravity, altered atmospheres, radiation, and cosmic particles moved by the solar wind.

From the golden decades of the Apollo missions and the Star Wars Threats of the 20th century until now, the New Space era, and at the end of the first quarter of the 21st century, human presence in space is restricted to low orbits in space stations. However, the advancement of technology has taken us closer to future achievements: the return to the Moon, Mars, and deep space. New technologies made space travel cheaper, and there was an expansion of actors involved in developing new solutions for space, culminating in the state decentralization of space enterprises. The narratives that justify new investments of time and financial resources, in addition to the work of countless engineers, scientists, thinkers, administrators, and investors, are driven both by the desire for new markets and new human adventures and by the imminent and very noticeable environmental risks that threaten the life here on