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Book Review

Experimentation with animal models in space

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Edited by	:	Gerald Sonnenfeld
Publisher	:	Elsevier
Published	:	2005
Type of book	:	Space Biology and Medicine

A study of animal models has been critical to the initiation and progress of space exploration. The changes occurring in physiological systems on exposure to spaceflight could negatively impact the ability of humans to undertake long-term habitation and exploration of space. However, there are limits to the studies that can be done with humans in space.

The book comprises the various developments regarding the application of animal models to study the effects of spaceflight environment on physiological systems. Each chapter is devoted to a particular animal model or physiological system, namely, hind limb unloading rat model, spaceflight immunology, neurovestibular experiments, circadian rhythm in space, skeletal effects of spaceflight, development as adaption, responses across the gravity continuum, i.e., hypergravity to microgravity, as well as effects of gravity in aquatic animals and non-human primates in spaceflight. Each topic has been further divided into subheadings for easy understanding of the basic concepts. Both ground-based and spaceflight animal model studies have been included. The studies on animals had paved the path for the development of unique insight into the mechanisms and potential role of gravity, stress, radiation, and other spaceflight environment factors on physiological systems. In addition, it had also facilitated the development of countermeasures to prevent any deleterious effects of the spaceflight environment on physiological systems.

The historical flight of the dog Laika on November 3, 1957, paved the way for the flight of the first human in space, Yuri Gagarin on April 12, 1961. The animal model experimental has provided and will provide in the future, crucial information required to allow long-term exploration of space and possibly exploratory missions beyond low earth orbit in near future.

Opinion about the book

The book is essentially a compilation of 10 review articles written by eminent scientists with vast experience in space experimentation and covers various disciplines and physiological functions affected in the spaceflight environment. The language is simple and keeps the reader engrossed. The tables, graphs, and pictorial representations depicted in each chapter are helpful in comprehending the content in a better way. The list of references at the end of each chapter offers the reader a scope for further lateral reading into the subject.

Recommendation

This book would be helpful in providing further insight into understanding the physiological changes on exposure to the spaceflight environment. In view of the evolving Human Space Programme in India, studying this book is recommended for the Aerospace Medicine Specialists.

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Conflicts of interest

There are no conflicts of interest.

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