

This issue of Basic and Applied Myology is dedicated to a specific topic: Microgravity and muscle unweighting. First of all, I would like to thank Dr Ugo Carraro for giving us the opportunity to bring together in this single issue the contributions of different laboratories which are involved in such researches.

The studies relative to microgravity began twenty years ago and the effects of weightlessness have already been extensively described, in particular in the neuromuscular system. Taking into account this new parameter, gravity, leads to a new exciting approach of the physiology which, however, still needs many other works. Indeed, the stakes of space conquest, the perspective of long duration flights, to reach Mars planet for instance, imply that the characteristics and origin of muscular modifications, especially atrophy, should be well controlled.

The experiments in real microgravity are limited, first by their feasibility in space vehicles and secondly by the frequency of spaceflights. Therefore, the use of different models which mimic the main characteristics of weightlessness appeared rapidly quite necessary. Many works were based on the rat suspended model and bed rest experiments when animals or humans are respectively concerned. Moreover, immobilization, denervation or tenotomy experiments are also used to contribute to the analyses.

This especial volume of BAM compiles eight articles including physiological, histochemical, morphological and ultrastructural approaches. All examine the role of one determinant factor: unloading. However, this factor cannot be studied alone without considering the correlated reduced activity and this problem will be examined here. Another question raised by the studies relative to disuse atrophy and treated in some papers is the muscle position, generally shortened during the unloading due to real or simulated microgravity. Other questions examined in this issue concern the type of control exerted by the nervous message and the possible dysfunction of the excitation contraction coupling. Finally, an associated process between damage and regeneration was proposed in unweighting/reloading conditions and data open optimistic perspectives for recovery and compensatory possibilities.

I would not end this editorial without thanking the contributors for their interesting results and the referees for their valuable expertise.

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