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Autore	LEPARULO, Alessandro
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Sommario	The effects of microgravity on the biophysical properties of frog labyrinthine hair cells have been examined by analyzing calcium and potassium currents in dissociated cells, using the patch-clamp technique. The entire, anaesthetized frog was exposed to vector-free gravity in a “random positioning machine (RPM)” and the functional modifications induced on single hair cells, dissected from the crista ampullaris, were subsequently studied in vitro. The major targets of microgravity exposure were the calcium/potassium current system and the IA (the fast transient potassium current) kinetic mechanism. The peak amplitude of the voltage-dependent calcium current, ICa, was significantly reduced in microgravity conditioned cells. The amplitude of the delayed potassium current, IKD (a complex of two different currents: IKV and IKCa), was drastically reduced, mostly in its IKCa component. Microgravity also affected IKD kinetics by shifting the steady-state inactivation curve towards negative potentials and increasing the sensitivity of inactivation removal to voltage. As concerns the IA, the I-V and steady–state inactivation curves were indistinguishable under normo- or microgravity conditions; conversely, IA decay systematically displayed a two-exponential time course and longer time constants in microgravity, thus potentially providing a larger K+ outward charge; furthermore,

	IA inactivation removal at -70 mV was slowed down. Stimulation in the RPM machine under normogravity conditions (to isolate the pure microgravity effects from those of the mere canal stimulation, due to the continuous rotation of the animal required to generate the artificial microgravity environment) resulted in minor effects on IKD and, occasionally, in incomplete IA inactivation at -40 mV. Reduced calcium influx and increased K+ repolarizing charge, in a variable mix according to the momentary membrane potential shifts, constitute a likely cause for the failure in the afferent mEPSP discharge at the cytoneural junction and for the reduced spike rate in the afferent fibers observed in the intact labyrinth after similar microgravity conditioning.
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