



Figure S1. Bone mineral density change (%) at the femoral neck of astronauts predicted by our non-linear model (in solid, black line) and by the linear model (in dashed, orange line) *versus* length of spaceflight. Grey dots represent experimental data obtained in previous missions as measured by dual-energy x-ray absorptiometry (DXA). Two different potential manned missions to Mars are highlighted: (i) opposition-class, with a duration of 400-600 days (area with red dots) and (ii) conjunction-class, with a duration of 1000-1200 days (area with red lines). The plateau is represented by the dot-dashed, black line. Please note that the linear model is unphysical as predicts negative bone mineral densities for the astronauts after 3500 days.