

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
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RUN, CAMP, AND HIKE ON THE MOON

**Abstract**

Will humans be able to practice recreational activities such as running, hiking, or camping on the Moon any soon? Is that achievable before setting a permanent lunar base? How would that help in future planetary travel?

Creating a semi-permanent lunar base for practicing sports activities requires less technological developments and is more realistic than building a self-sufficient base. Luna Castra is a semi-permanent lunar project that combines entertainment and scientific activities. It represents the middle ground between short interval activities on the Moon and a permanent base. Such position reduces the required developments and shortens the time to reach mission readiness.

The project runs trips to the Moon including landing and living on its surface. Its design elements include a lunar orbiter station, landers, lunar structures, rovers, in addition to the Earth-Moon shuttle system. Closed habitats, spacesuits, and numerous gadgets are also elements of the mission design.

Luna Castra's design, development, and implementation progress in phases which allows several accomplishments before the complete project is realized.

Among its advantages: A. The short and temporary nature of staying on the Moon makes it more attainable. Especially that similar trips have already been achieved, yielding design and technology heritage.

B. The successful record of landing on the Moon and returning to Earth encourages the commercial space sector that prefers to invest in tested projects over riskier uncharted ones.

C. Sport activities attract people from outside the space travel field. That could include corporations in the sports industry which helps with the economic factor, and introduces commercial space involvement.

D. The physiological and psychological effects on space travelers could be studied in partial gravity in preparation for deep and long space travel missions. That will help the human factors research which is limited to few isolated experiments on Earth and on the ISS.

E. The habitats, gears, and gadgets developed for such project have earthly use and could be produced for remote or challenging geographical regions which do not restrain the output to space missions.

Luna Castra can commence, progress, and realize, faster than establishing a permanent Moon base, or than accomplishing commercial projects aiming to mining asteroids. It is a step closer to the deep space travel that would shrink the time required to achieve milestones on the road map to planetary travel.