

# PRESSURE

**DEFINITION:** force over a particular area

The word 'pressure' takes on lots of meanings in today's language. The physical definition of pressure states how much push, or gravitational force, is being exerted by all the matter around or nearby. Solids, liquids, or gasses can experience or exert pressure.

**Units:** many different units used depending on field of science: pounds per square inch (psi), millibars, etc. Below we use Pascals (Newton/meter<sup>2</sup>) which is about 0.000145 pounds per square inch

**EVERYDAY EXAMPLE**  
**human blood pressure**  
(15,000 Pascals)

pressure of atmosphere at sea level (101,325 Pascals).



**COSMIC EXAMPLE**

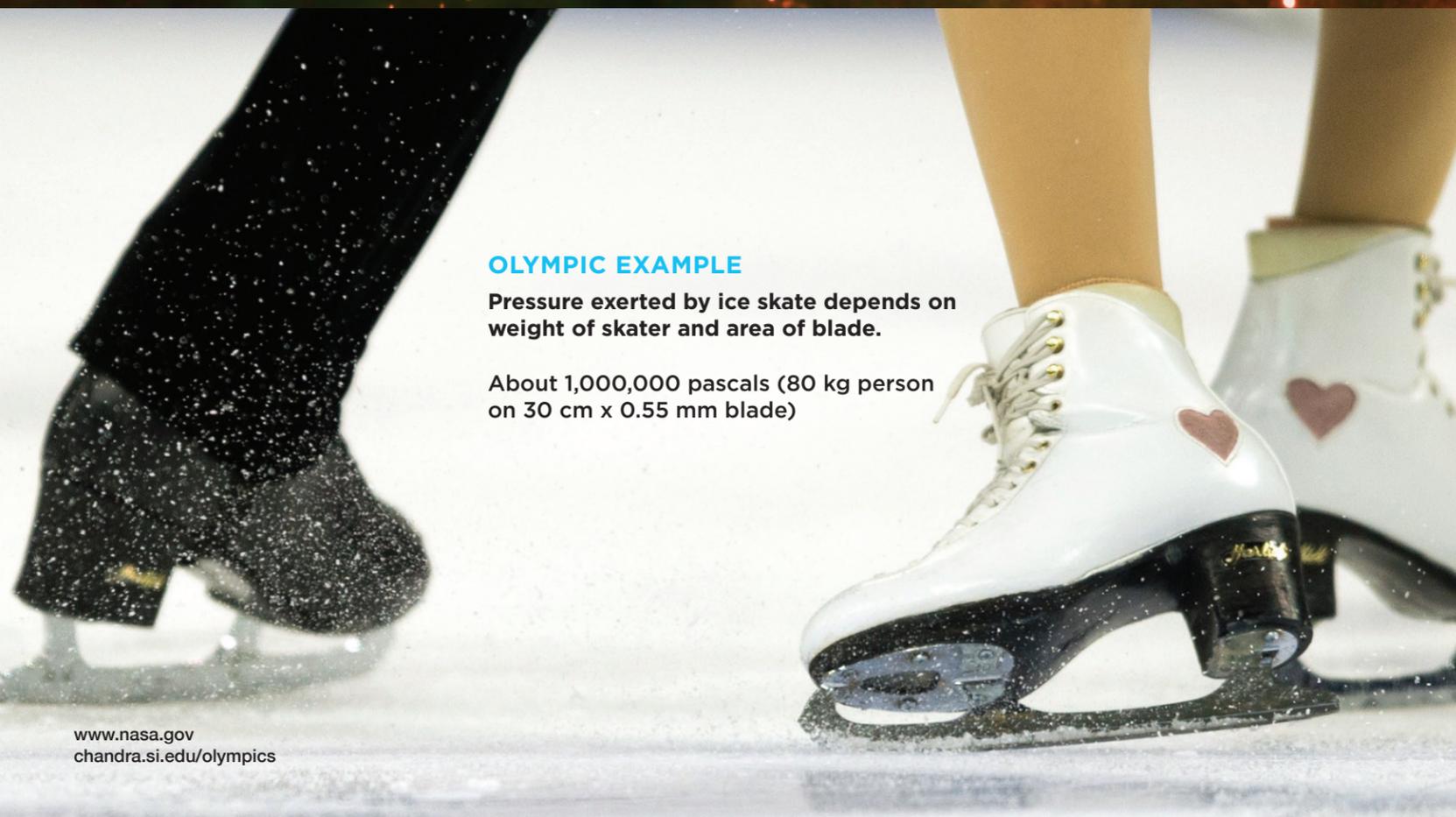
**Central pressure of a neutron star:**  
**10,000,000,000,000,000,000,000,000,000,000**  
**or 10 decillion or  $10 \times 10^{33}$  Pascals**

Within the blue-green cloud is a neutron star, an object so compact and dense that the pressure in its center is  $10 \times 10^{33}$  Pascals, far greater than anything found on Earth.

**OLYMPIC EXAMPLE**

**Pressure exerted by ice skate depends on weight of skater and area of blade.**

About 1,000,000 pascals (80 kg person on 30 cm x 0.55 mm blade)



ASTROLYMPICS *winter*