What is acute cardiac unloading?

Acute cardiac unloading is any maneuver, therapy, or intervention that decreases the power expenditure of the ventricle and limits the hemodynamic forces that lead to ventricular remodeling after insult or injury to the heart.

Acute cardiac unloading produces a state in which the myocardium is able to more fully rest and recover. The heart actively pumps blood through the cardiovascular system. This process consumes energy. Pumping blood is considered the workload of the heart. Acute cardiac unloading is any maneuver, therapy, or intervention that decreases the workload and oxygen demand of the heart. The clinical, preclinical, and basic research of the A-CURE Working Group focuses primarily on the use of a mechanical circulatory support devices as the means to unload the heart.

Cardiac unloading achieves four primary endpoints:

1. Cardiac output is supplanted (either fully or partially) by the mechanical circulatory device, thereby decreasing the myocardial oxygen consumption (MVO2) associated with the mechanical work of pumping blood
2. Arterial perfusion pressure is increased and maintained independent of ventricular function.
3. Ventricular preload is reduced leading to decreased ventricular wall stress
4. Coronary blood flow and myocardial oxygen delivery is increased.

Read more on the science behind acute cardiac unloading.