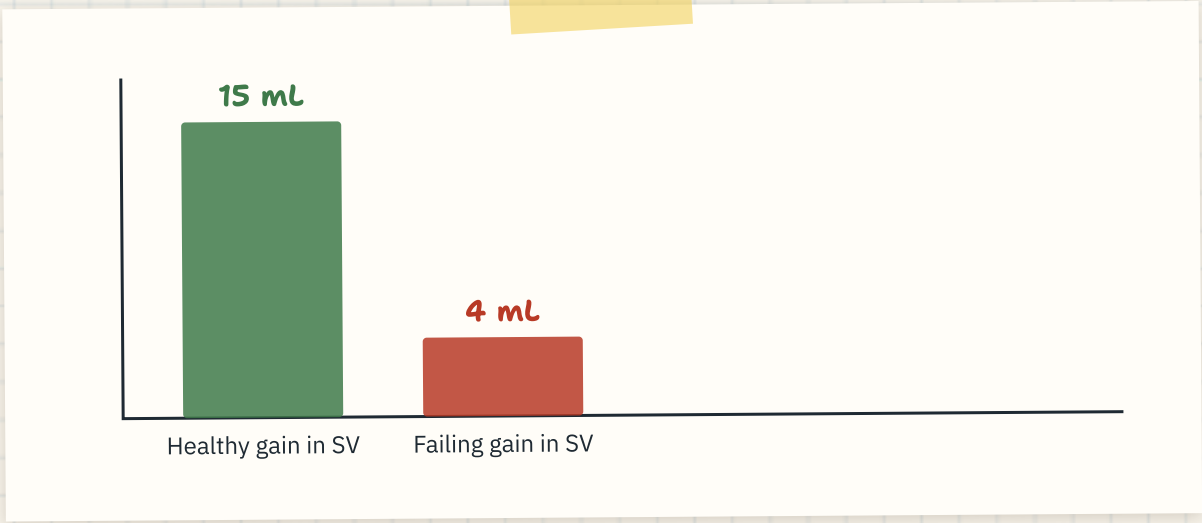
The Frank-Starling curve

Preload slides you along the curve; inotropy and failure shift it



Step by step

1. Stretch lengthens sarcomeres
2. Part of the reason: troponin C becomes more sensitive to calcium
3. More force, more stroke volume at the same calcium level
4. Failure: ventricle fills more and moves right along a lower curve

Change	Curve	SV at any filling
Preload up or down	Move along the curve	Follows filling
Inotropy up (exercise)	Shifts up and left	Higher
Inotropy down	Shifts down	Lower
Afterload up	Shifts down and right	Lower
Systolic failure	Lower curve, lower slope	Much lower

Along the curve or shifting it

Two moves

Preload slides you along the curve

Inotropy or failure shifts the curve

Exam traps

- Moving along the curve is not the same as shifting the curve.
- Preload is read as EDV or EDP, not as stroke volume.
- Compensation in failure wins back some stroke volume but raises pressure, causing congestion and oedema.

The Frank-Starling curve: preload, inotropy and heart failure

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/cardiovascular/frank-starling-curve

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