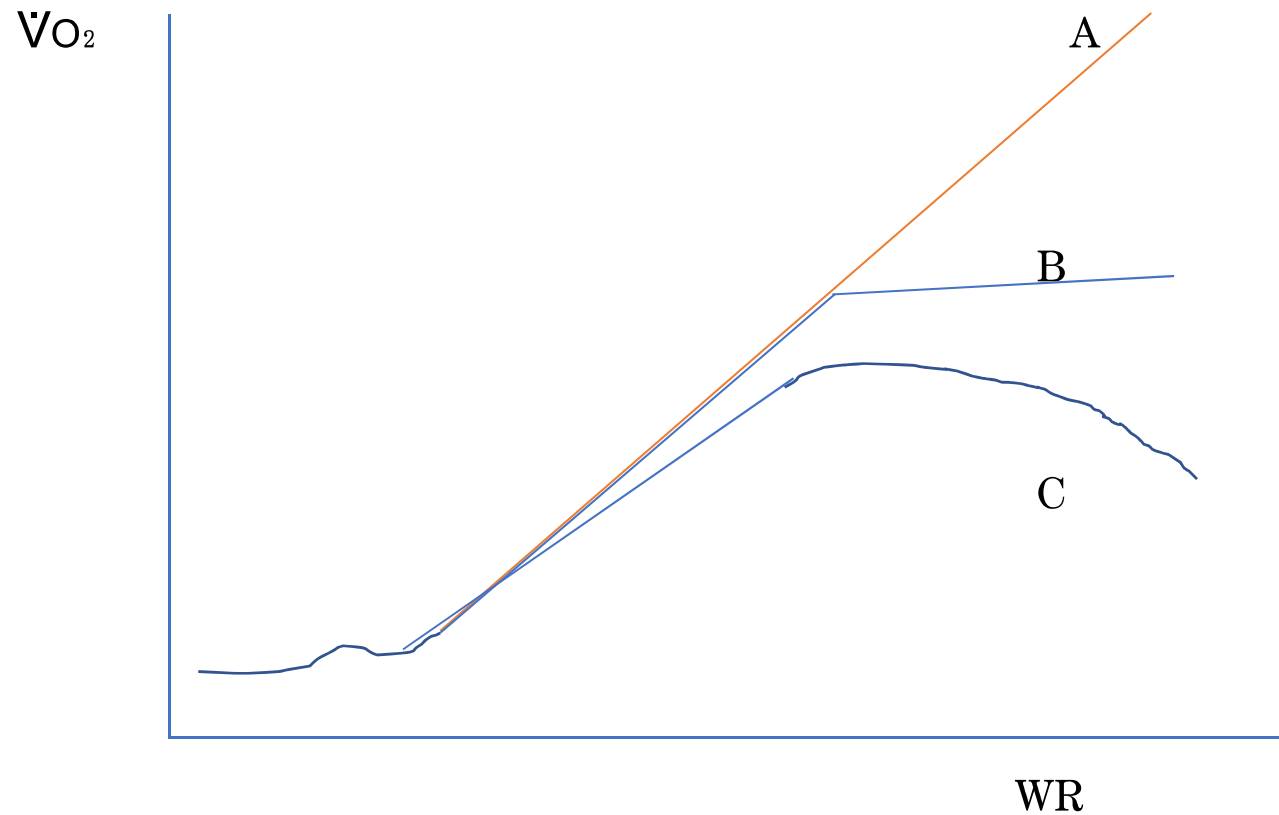
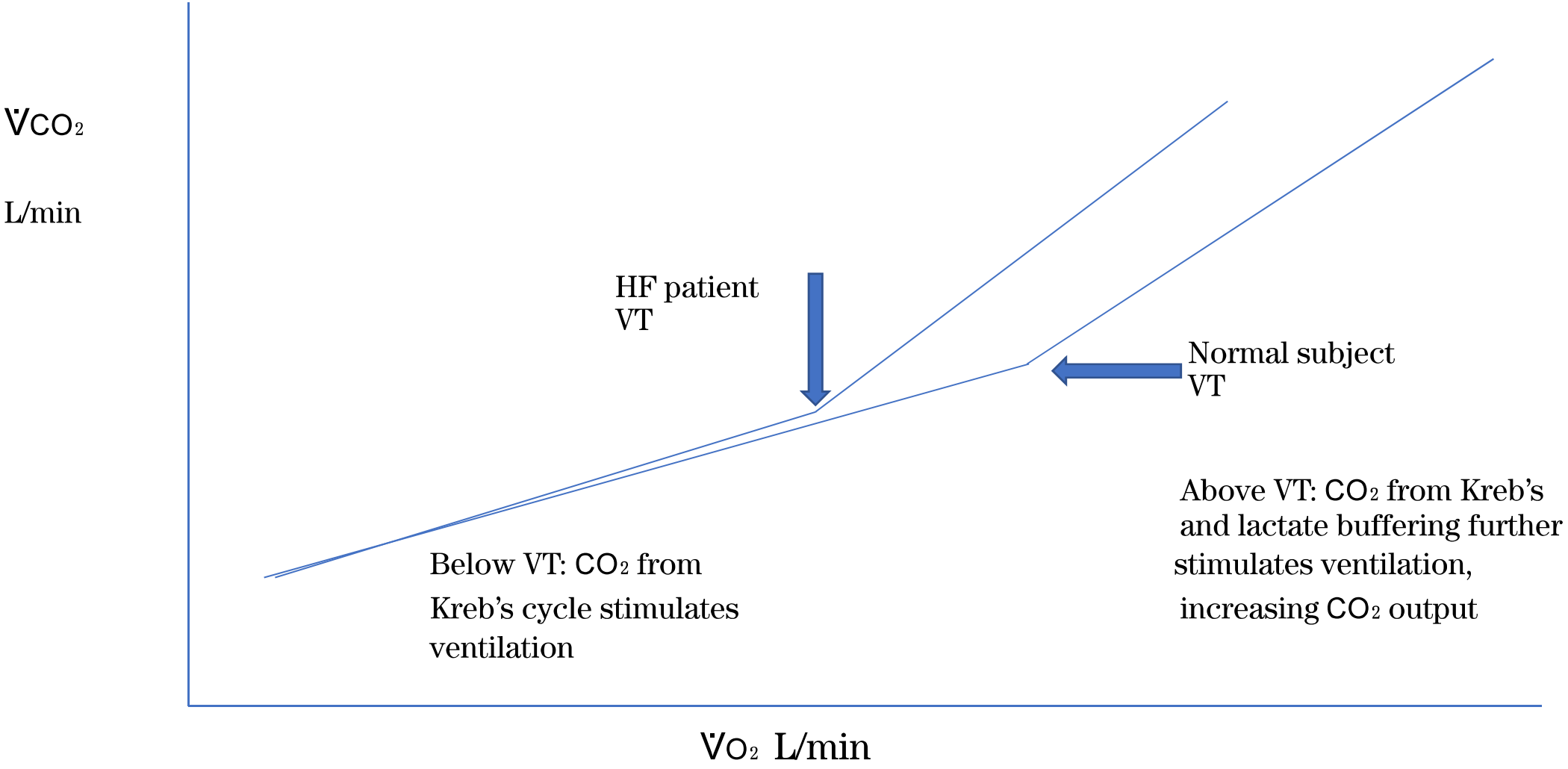


Figure 2. Work rate (Watts)  $\dot{V}O_2$  relationship in normal subjects and patients with heart failure. A: Normal slope is  $\sim 10$  ml  $\dot{V}O_2$  per Watt. B: At high work rates, the  $\dot{V}O_2$ /Watts slope may plateau in HF patients. C: In severe LV dysfunction,  $\dot{V}O_2$  may decline as blood pressure and cardiac output are reduced.



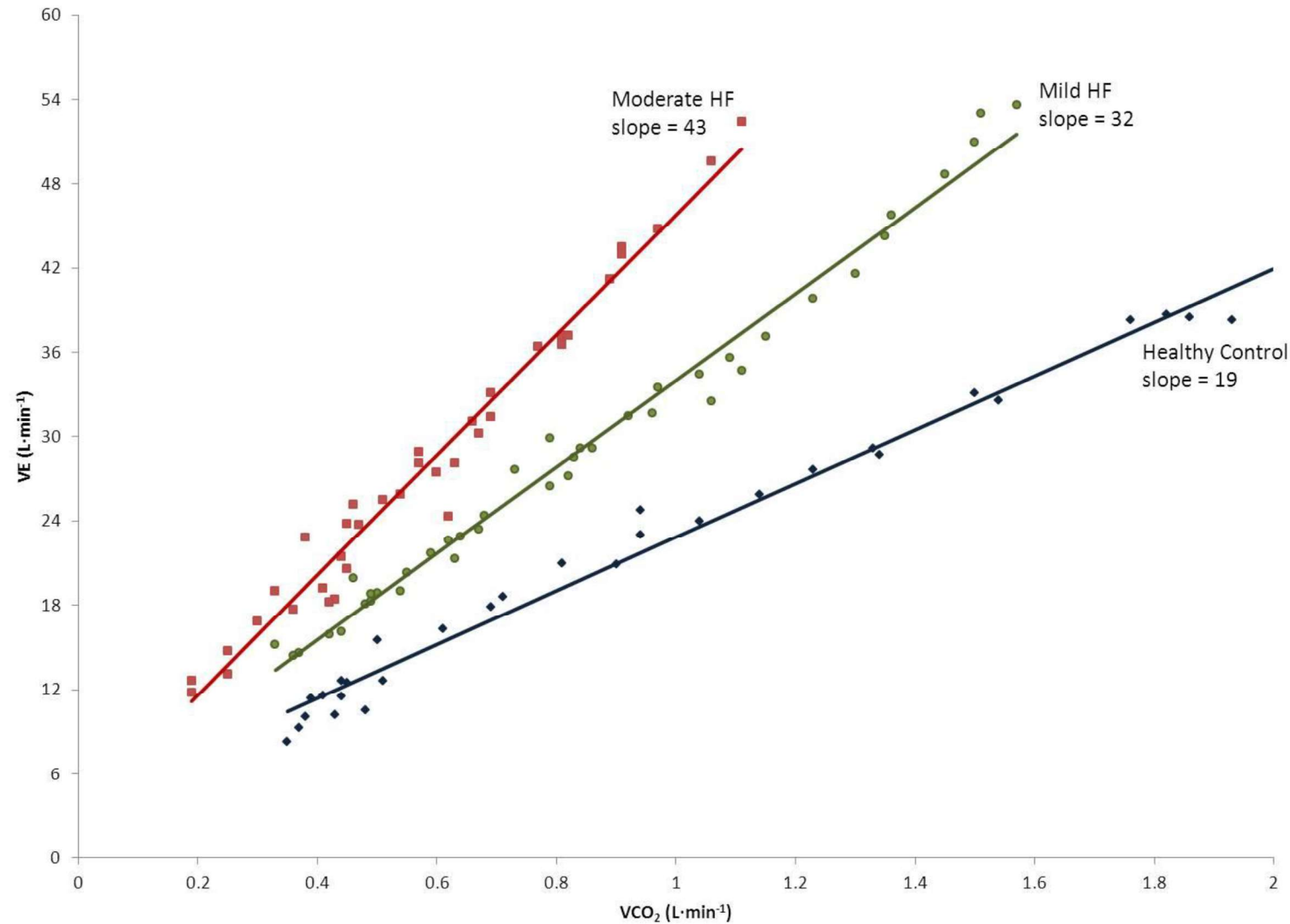
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Figure 3. Identification of the ventilatory threshold (VT) by the V-Slope method. Patients with heart failure demonstrate a change in the V-Slope at a lower  $\text{VO}_2$ .



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Figure 4. Ventilatory response ( $V_E$ ) as a function of  $V_{CO_2}$  ( $V_E/V_{CO_2}$  slope) during incremental exercise in normal and patients with mild or moderate heart failure.



Santoro, C., Sorrentino, R., Esposito, R. et al. Cardiopulmonary exercise testing and echocardiographic exam: an useful interaction. *Cardiovasc Ultrasound* 17, 29 (2019). <https://doi.org/10.1186/s12947-019-0180>. Permission obtained.