TIMED STAIR CLIMB

- For frail individuals
  - Climb 4 risers of stairs as fast as possible
  - No use of handrail
  - Stairs .15 meter (5.9 inches) high; .30 meter (11.8 inches) long
  - 3 trials with 2 minutes of rest between trials
  - Best of 3 trials used
  - Stair climbing power (SCP in watts) = body weight x vertical height climbed divided by time to ascend

(Seynnes O, Flatarone Singh MA, et al, 2004)

TIMED STAIR CLIMB

- Is a test of lower limb muscle power
- Muscle power (force generation x speed) may be more relevant than muscle strength for performance and function in aging adults (Foldvari M, Clark M, et al, 2000)

TIMED STAIR CLIMB

- Instruct subjects to climb a standard flight of stairs without use of handrail or any aids as fast as they can
  - 11 stairs
  - 16 cm rise per stair (Lazowski, et al, 1999)
- Calculate stair-climbing power (SCP)

$$SCP = \frac{\text{body wt (kg)} \times \text{gravity (m s}^{-1}) \times \text{step height (m)} \times \text{\# steps}}{\text{time (sec)}}$$

Gravity = 9.8 m/s^2

- Coefficient of variation for stair climbing time is 4.8%
  (Henwood TM, Taaffe DR, 2005)

Timed Stair Climb

1. Stand with individual at base of well-lighted, 10-stair flight
2. Instruct subjects to safely ascend stairs as fast as they can; they may use handrail if thought necessary for safety (but not to help to go faster) and they begin climbing when the PT says "Ready, set, go"
3. Timing begins after PT says "go" and once the individual begins moving
4. When both feet reach the top step, the timing stops

Calculate stair-climbing power (SCP)

$$SCP = \frac{\text{body wt (kg) x gravity (m/s}^2\text{) x step height x \# steps}}{\text{time (sec)}}$$

$$\text{Gravity} = 9.8 \text{ m/s}^2$$