



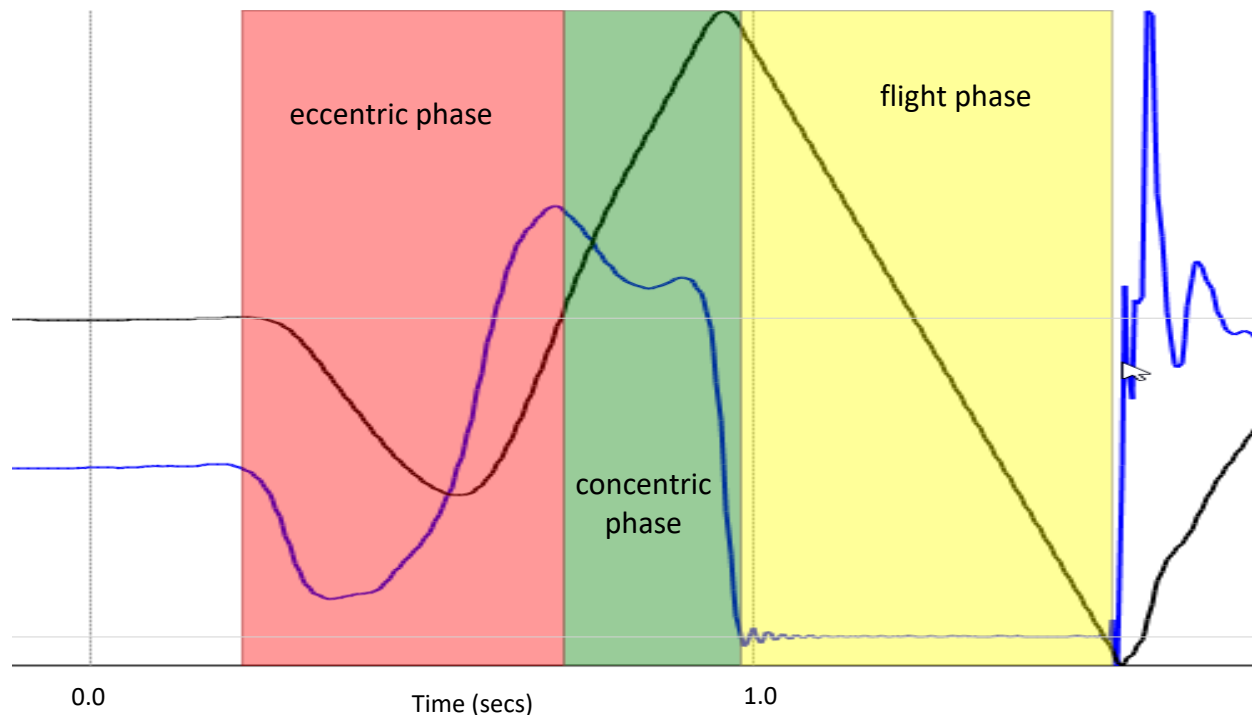
Technical Note

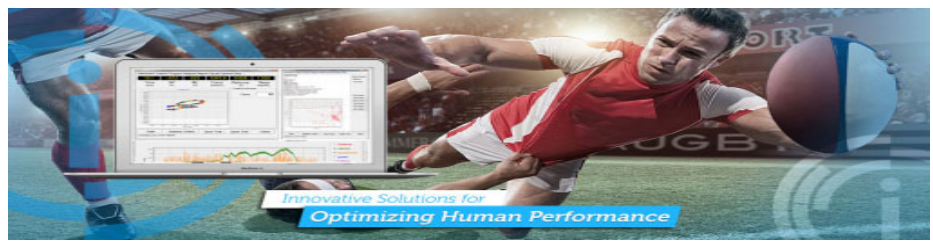
Updated 30th July 2021

Ballistic Measurement System Technical Note Determination of phases of a countermovement jump

The Ballistic Measurement System Software Version 2021 can automatically locate the phases of a countermovement jump using criteria well established in the research literature ([Krzyszowski et al 2020](#)). The three main phases are:

- 1) eccentric
 - a. start = time at which force drops 2.5% below body weight
 - b. end = time of zero crossing of velocity from negative to positive
- 2) concentric
 - a. start = time of zero crossing of velocity from negative to positive
 - b. end = time of takeoff defined as force dropping below threshold (default = 20N)
- 3) flight
 - a. start = time of takeoff defined as force dropping below threshold (default = 20N)
 - b. end = time of landing defined as force rising above threshold (default = 20N)





Sub-Phases of the Eccentric Phase

The eccentric phase is further defined within the BMS software using the criteria of [\(Krzyszowski et al 2020\)](#). These phases are:

- 1) unloading
 - a. start = time at which force drops 2.5% below body weight
 - b. end = time of minimum force during eccentric phase
- 2) yielding
 - a. start = time of minimum force during eccentric phase
 - b. end = time of peak negative COM velocity (i.e. time of lowest velocity)
- 3) braking
 - a. start = time of peak negative COM velocity (i.e. time of lowest velocity)
 - b. end = time of zero crossing of velocity from negative to positive

