Infographic: exploring gait coordination using the vector coding technique
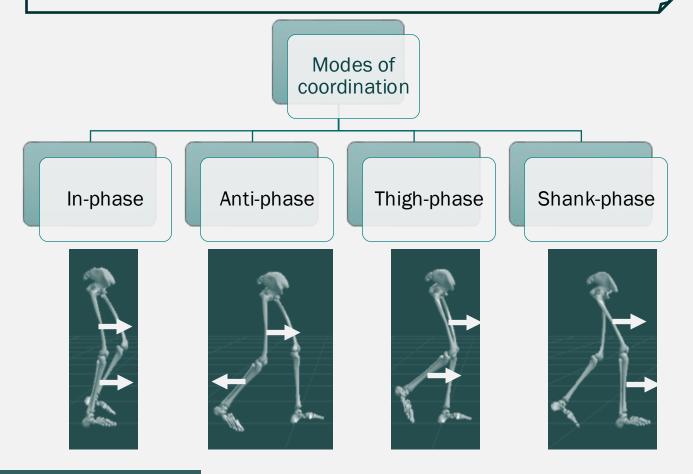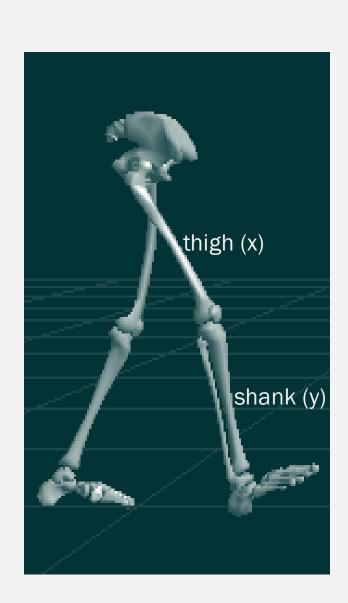
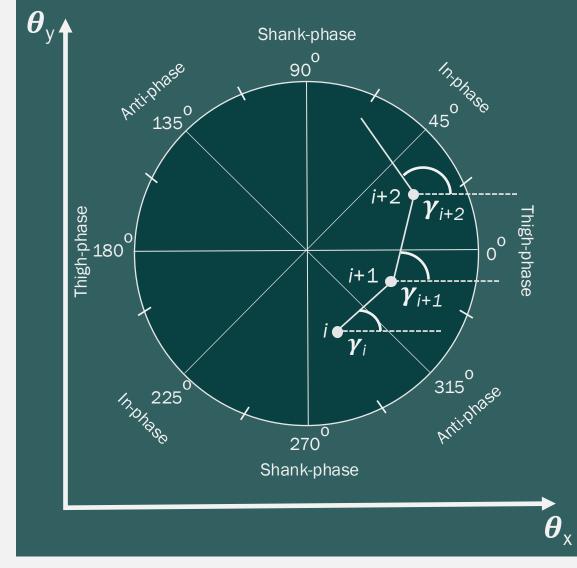## Vector coding technique

- ✓ A spatial measurement technique

- ✓ Focus on the relationship between two elements (e.g., 2 adjacent body segments) in terms of angular displacement

- ✓ Primary output: 4 modes of coordination

Example of two elements: thigh and shank

Modes of coordination
- In-phase
- Anti-phase
- Thigh-phase
- Shank-phase

thigh (x)

shank (y)

$$\gamma_{j,I} = \tan^{1}\left(\frac{y_{j,i+1} - y_{j,i}}{x_{j,i+1} - x_{j,i}} \right)$$

γ: coupling angle
j: gait cycle
i: consecutive data point in a cycle
y: distal segment angular displacement
x: proximal segment angular displacement

Coupling angle (γ) reveals the relative motion between thigh and shank in two successive time points in relation to the right horizontal, as illustrated in the figure above (middle portion), and calculated with the presented equation.