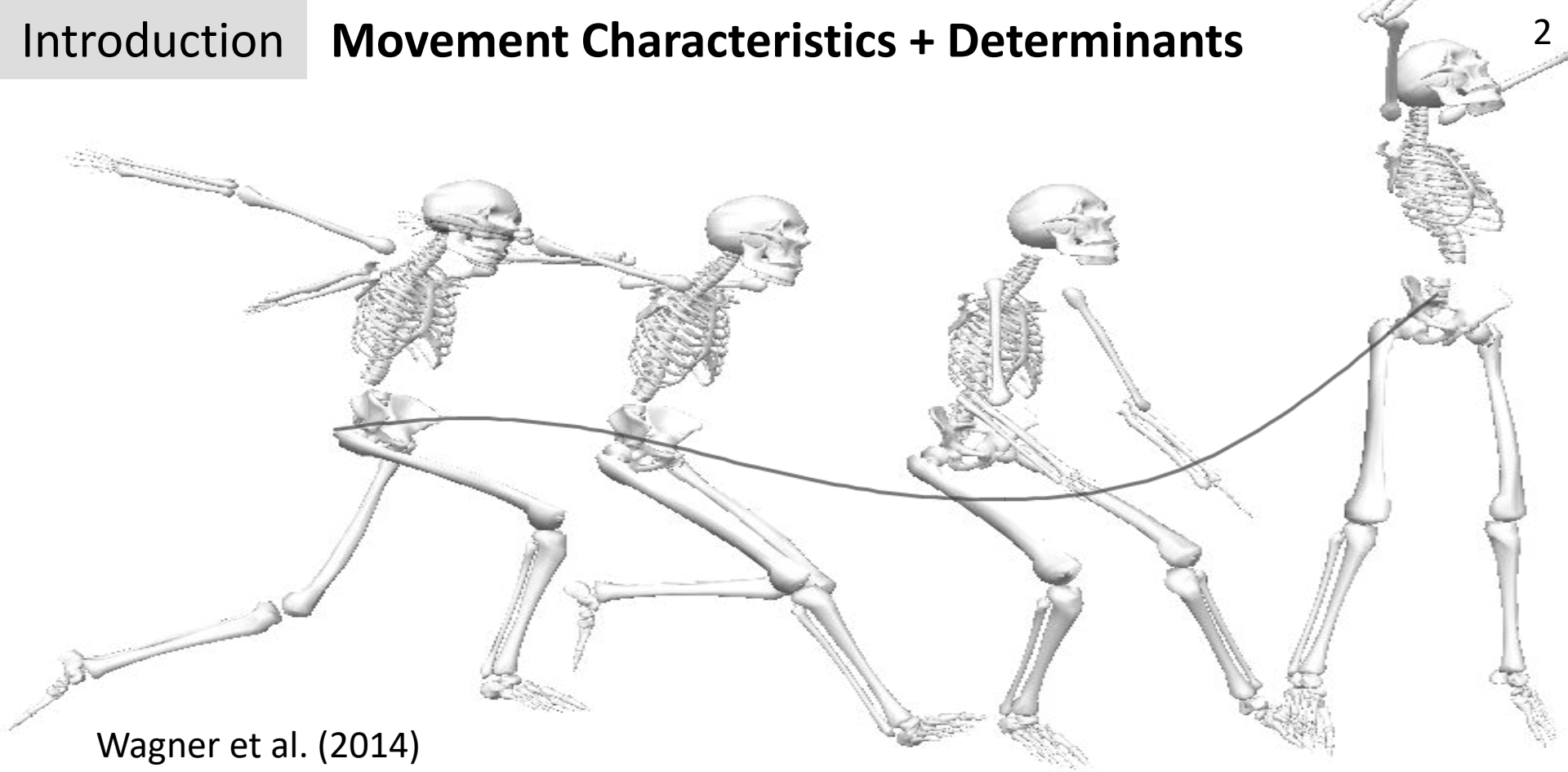


Importance of the volleyball spike jump **performance**

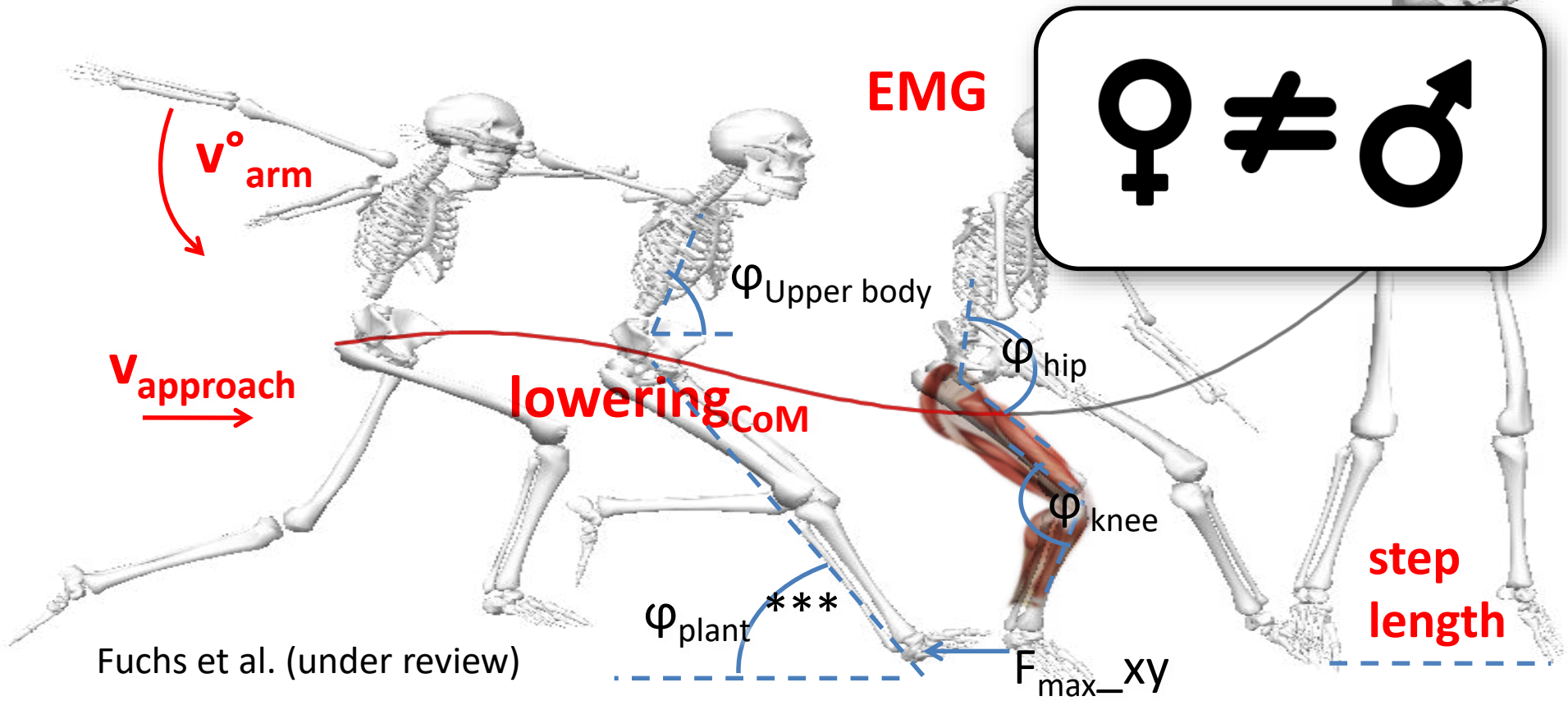
**jump
height**

**ball
velocity**

Forthomme et al. (2005); Ziv & Lidor (2010)



Wagner et al. (2014)



Stressing determinants in training is important

Aim: To identify determinants of
volleyball spike jump performance in females

Highest national
division

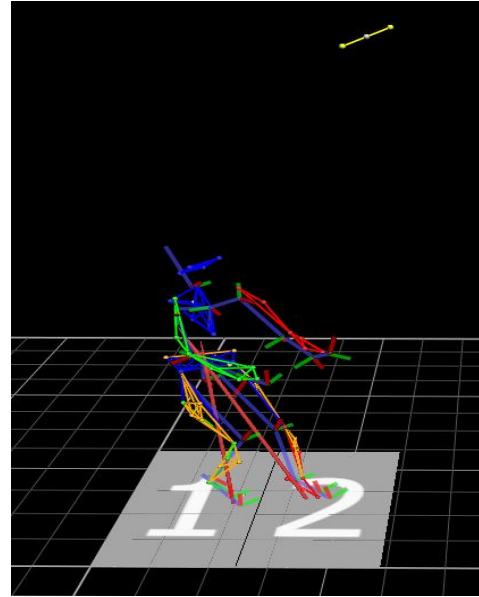
Females (n=15):

	mean	±	SD
Age [y]	19.9	±	3.5
Height [m]	1.79	±	0.06
Mass [kg]	70.47	±	11.02
Training [y]	8.4	±	3.9
T [h/week]	11.5	±	2.2

Methods Instruments



12 Vicon MX-13
250Hz



2 AMTI force plates
2000Hz

- Cleveland marker set
- V3D model

- General warm-up
- Specific warm-up (test trials)
- 10 valid spike jumps per participant

- Filtering and normalising data, calculating variables
- Normality testing, Pearson's Product Moment correlation
- 2 forward-stepwise analyses for jump height and ball velocity (without co-linearity)

Significant correlation results: 10 out of 42 variables

Counter movement

(RoM D knee, $r=.82^{***}$)

(RoM D ankle, $r=.69^{**}$)

(RoM ND ankle, $r=.72^{**}$)

Leg extension

(max. D knee velocity, $r=.85^{***}$)

(max. ND knee velocity, $r=.59^*$)

(max. D ankle velocity, $r=.72^{**}$)

(max. ND ankle velocity, $r=.75^{**}$)



$$y = -0.21 + 4.49 \times 10^{-4} \times \text{max. D knee angular velocity} \\ + 0.20 \times \text{orientation step length} (R^2=.82^{***})$$

Approach

(orientation step length, $r=.61^*$)

Arm swing

(min. ND arm-to-vertical angle, $r=.61^*$)

(max. ND shoulder velocity, $r=.64^*$)

Significant correlation results: 0 out of 22 variables

Age ($r=.52$)

$p < .1$

Max. joint velocities

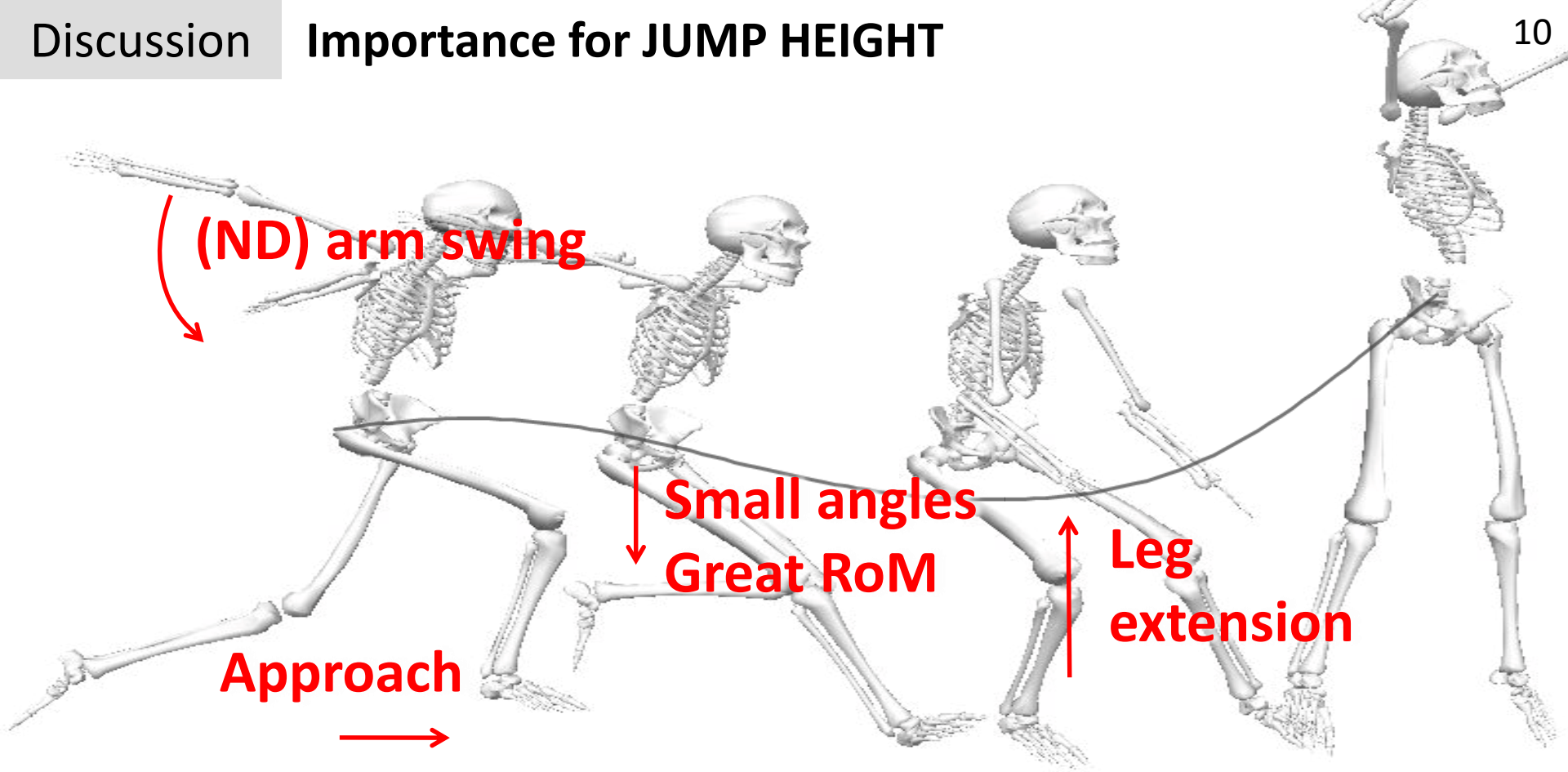
(pelvis rotation, $r=.49$)

(elbow extension, $r=.51$)

Anthropometrics

(upper arm length, $r=.44$)

(forearm length, $r=.49$)



1. Coordination > single variables



2. Biased by striking technique (Seminati et al., 2015)

Jump height:

- Optimise approach
- Improve arm swing
- Engage small lower limb angles

Ball velocity:

- Assessment of coordination required
- Consider variances of striking techniques