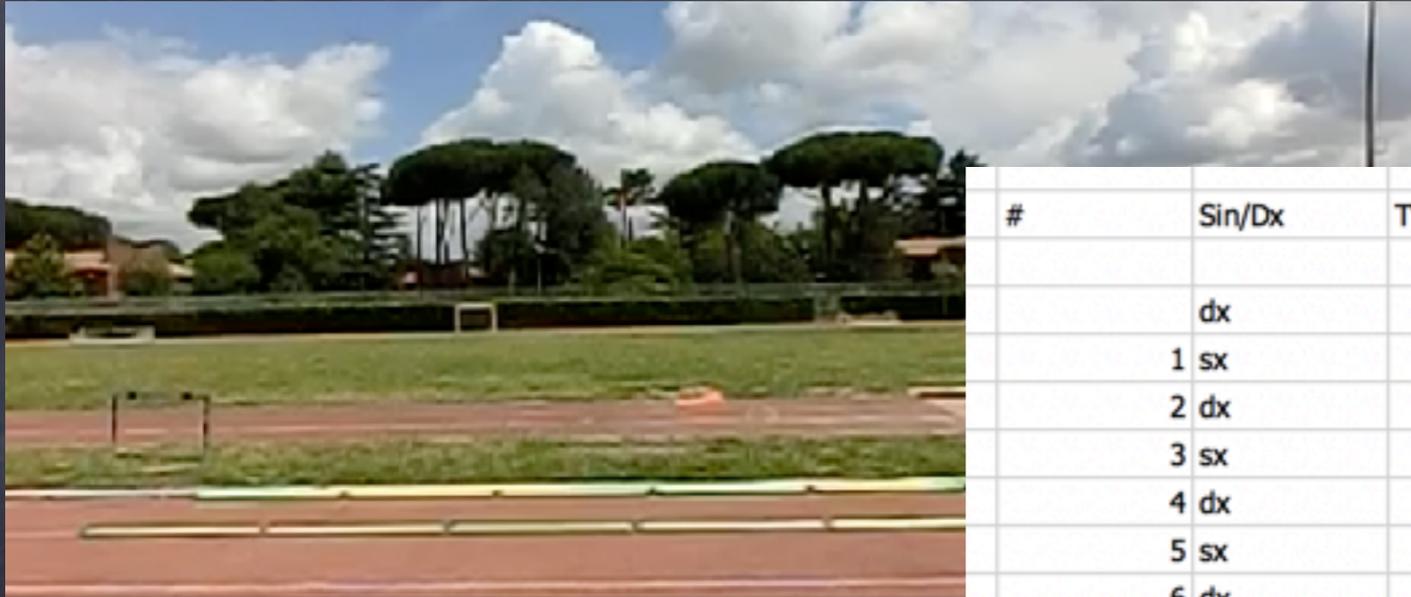


Approcci per una valutazione cinematografica (nella Marcia)

G. Pavei

Partiamo da "terra"

"Livello 1"

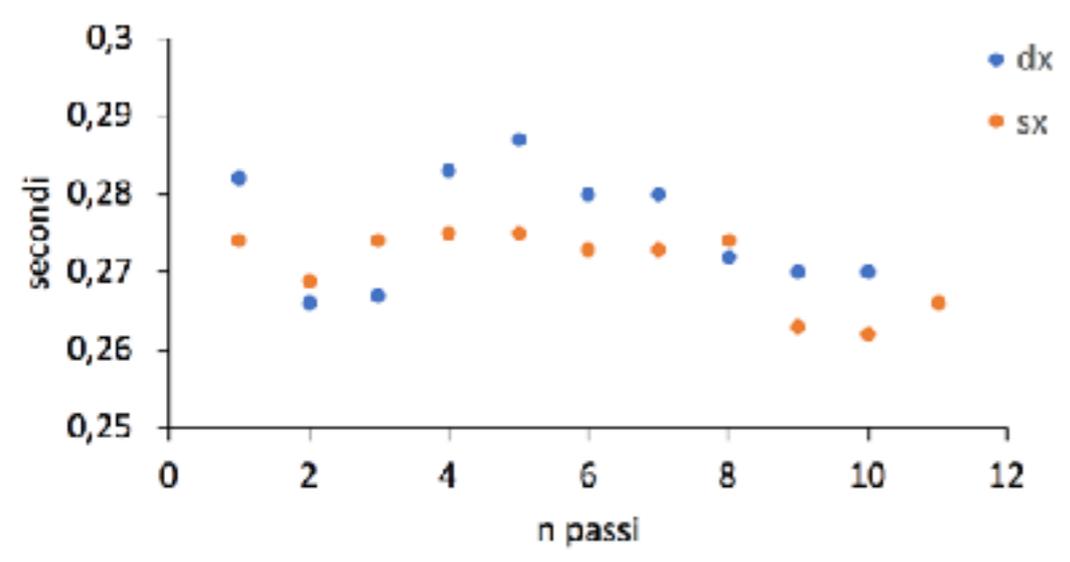


#	Sin/Dx	TVolo (s)	TContatto (s)	Passi (cm)	6x1600	step Freq (Hz)	velocità (m/s)	
	dx			94	3° 1600			
1	sx	0.024	0.274	110	3° 1600	3.36	3.69	
2	dx	0.038	0.282	115	3° 1600	3.13	3.59	
3	sx	0.028	0.269	113	3° 1600	3.37	3.80	
4	dx	0.037	0.266	113	3° 1600	3.30	3.73	
5	sx	0.021	0.274	111	3° 1600	3.39	3.76	
6	dx	0.04	0.267	115	3° 1600	3.26	3.75	
7	sx	0.028	0.275	113	3° 1600	3.30	3.73	
8	dx	0.01	0.283	114	3° 1600	3.41	3.89	
	sx	0.314	0.285	225	3° 1600	1.67	3.76	
10	dx	sx	0.022	0.275	114	3° 1600	3.37	3.84
11	sx	dx	0.021	0.287	116	3° 1600	3.25	3.77
12	dx	sx	0.027	0.273	115	3° 1600	3.33	3.83
13	sx	dx	0.023	0.28	113	3° 1600	3.30	3.73
14	dx	sx	0.03	0.273	114	3° 1600	3.30	3.76
15	sx	dx	0.024	0.28	114	3° 1600	3.29	3.75
16	dx	sx	0.03	0.274	111	3° 1600	3.29	3.65
17	sx	dx	0.038	0.272	114	3° 1600	3.23	3.68
18	dx	sx	0.032	0.263	114	3° 1600	3.39	3.86
19	sx	dx	0.038	0.27	115	3° 1600	3.25	3.73
20	dx	sx	0.03	0.262	113	3° 1600	3.42	3.87
21	sx	dx	0.034	0.27	113	3° 1600	3.29	3.72
22	dx	sx	0.035	0.266	115	3° 1600	3.32	3.82
23	sx		0.334	0.266	225	3° 1600	1.67	3.75
24	dx			0.254		3° 1600		

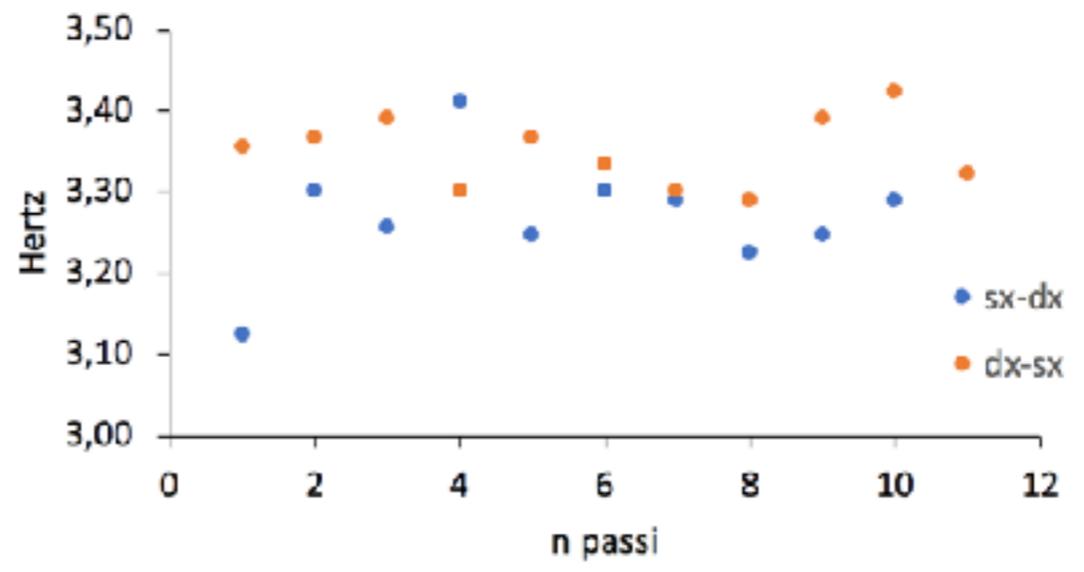
Output OptoJump

"
Livello 1"

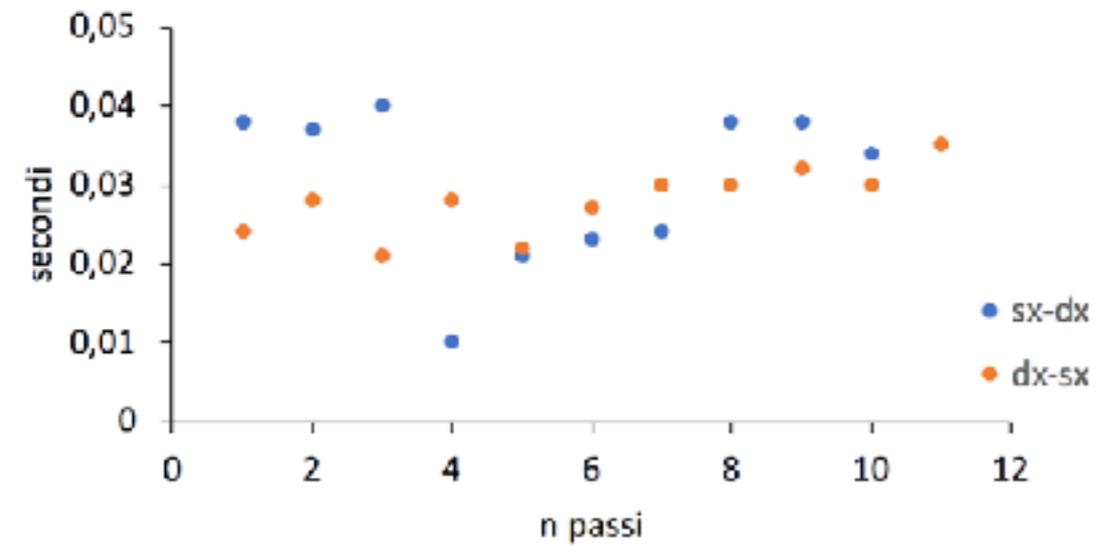
Tempo di contatto



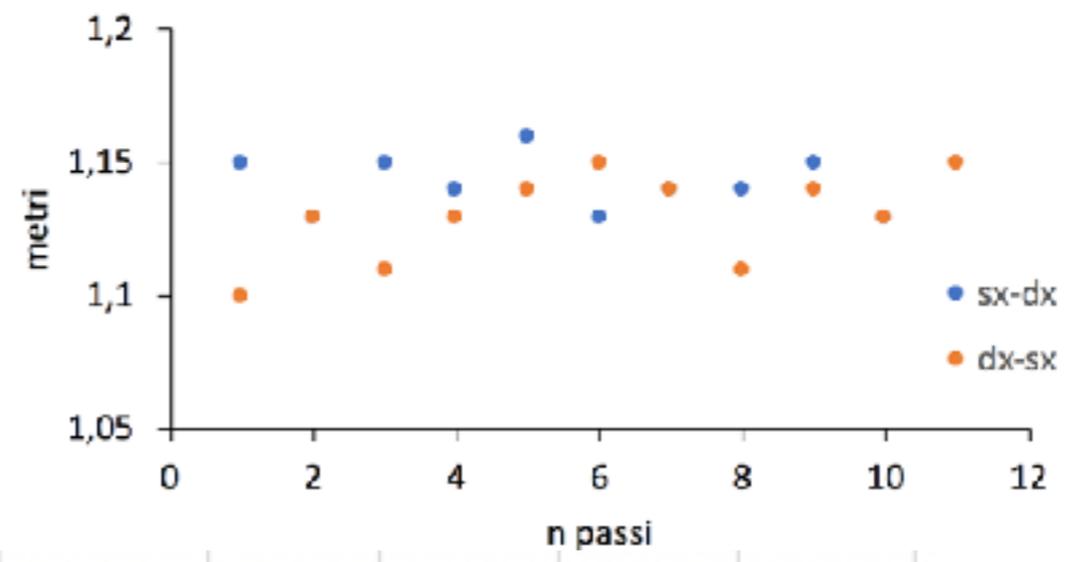
Step Frequency



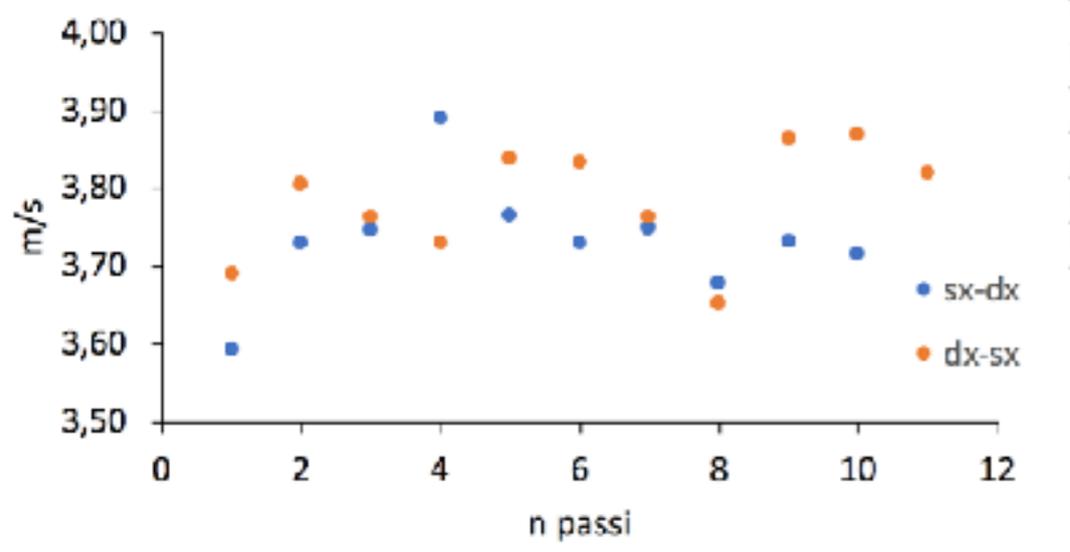
Tempo di volo



Step Length



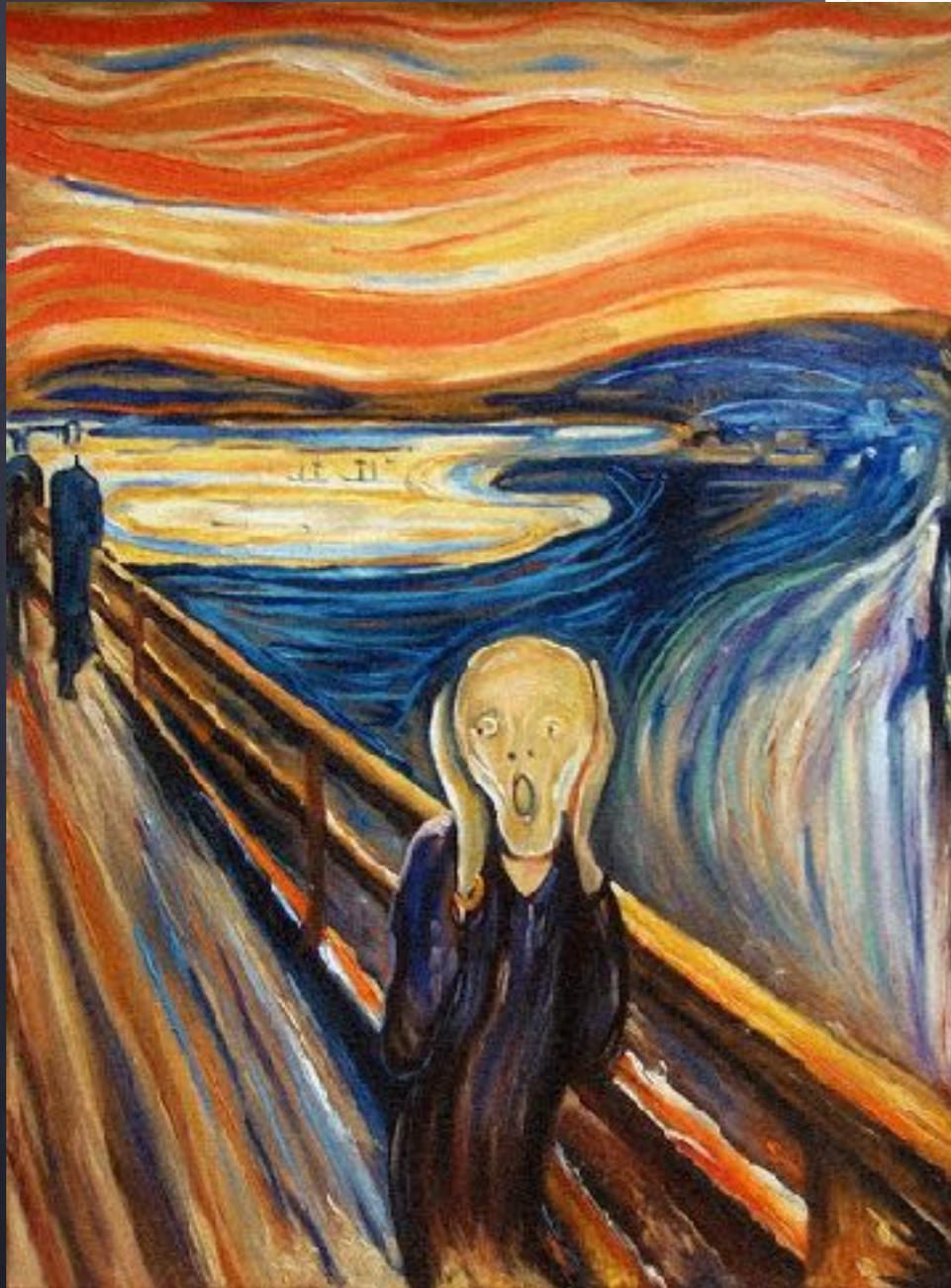
Velocità



	sx-dx		dx-sx			media		SD
	media	SD	media	SD		media	SD	
t contatto (s)	0.276	0.010	0.271	0.004	t contatto (s)	0.273	0.007	
t volo (s)	0.030	0.007	0.028	0.005	t volo (s)	0.029	0.008	
Step L (m)	1.14	0.01	1.13	0.02	Step L (m)	1.14	0.02	
Step F (Hz)	3.27	0.07	3.35	0.04	Step F (Hz)	3.31	0.07	
velocità (m/s)	3.73	0.07	3.78	0.07	velocità (m/s)	3.76	0.08	

andamento con
velocità e stanchezza

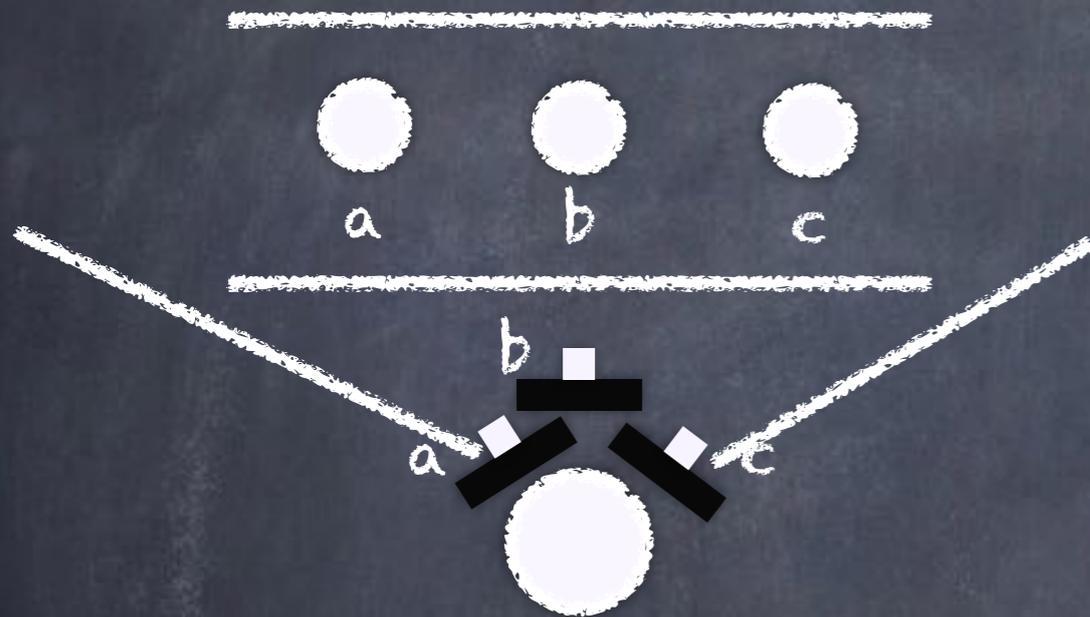
OptoJump



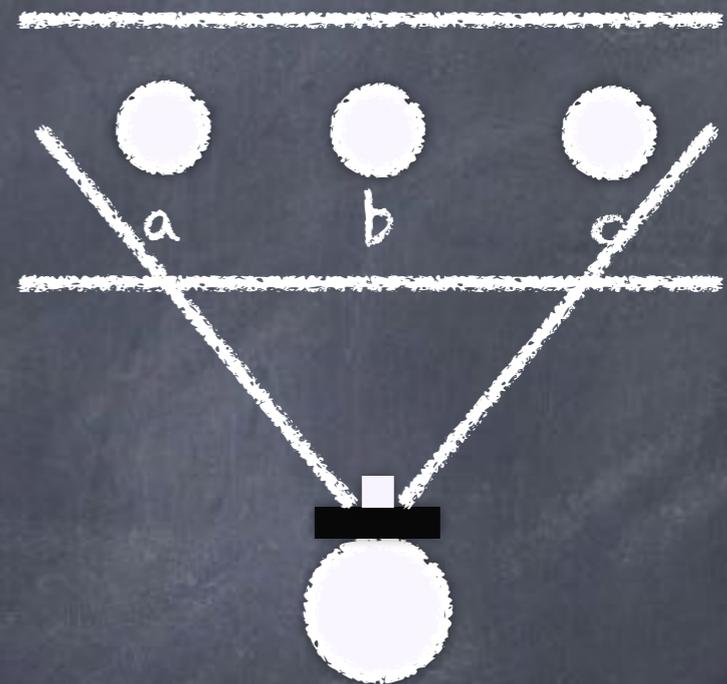
#	Sin/Dx	TVolo	TContatto	Passi
1	sx	0.003	0.282	100
2	dx			89
3	sx		0.317	
4	dx	0.124	0.198	121
5	sx	0.437	0.313	108
6	dx	0.002	0.313	105
7	sx			107
8	dx		0.322	
9	sx	0.001	0.32	105
10	dx	0.002	0.322	111
11	sx	0.004	0.321	107
12	dx	0.322	0.329	218
13	sx			109
14	dx		0.325	
15	sx	0.019	0.316	111
16	dx	0.01	0.305	109
17	sx	0.012	0.314	113
18	dx			113
19	sx		0.326	
20	dx	0.015	0.317	106
21	sx	0.328	0.31	216
22	dx	0.002	0.319	107
23	sx	0.01	0.311	103
24	dx	0.004	0.309	106
25	sx	0.011	0.312	104
26	dx	0.015	0.299	105
27	sx	0.017	0.304	105
28	dx	0.324	0.3	210
29	sx		0.308	

Aggiungiamo un video

"Livello 2"



Guardo



Analizzo

Aggiungiamo un video

"Livello 2"

Attacco



67.7°

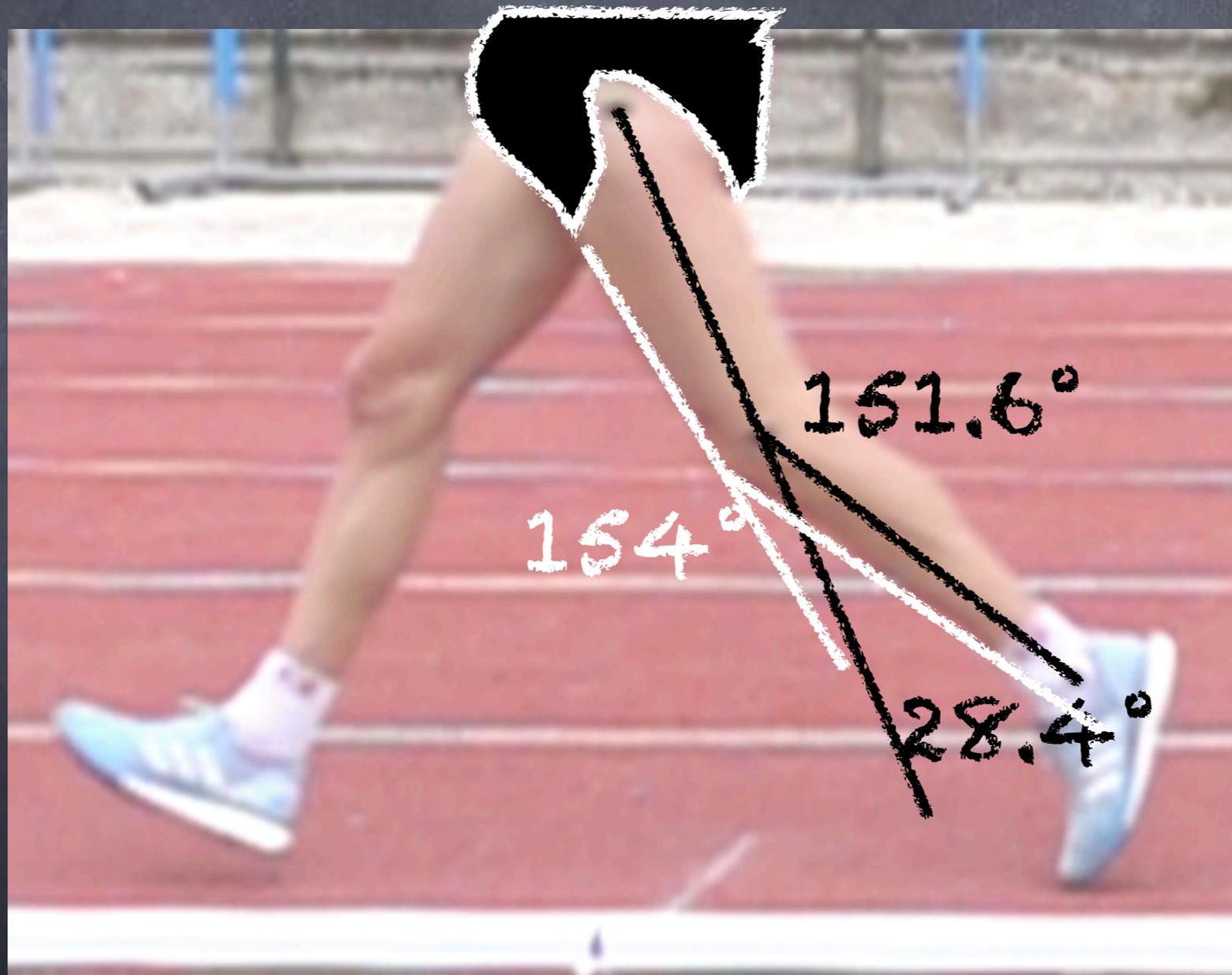
68.1°

variazione di un pixel = 0.5°

Aggiungiamo un video

"Livello 2"

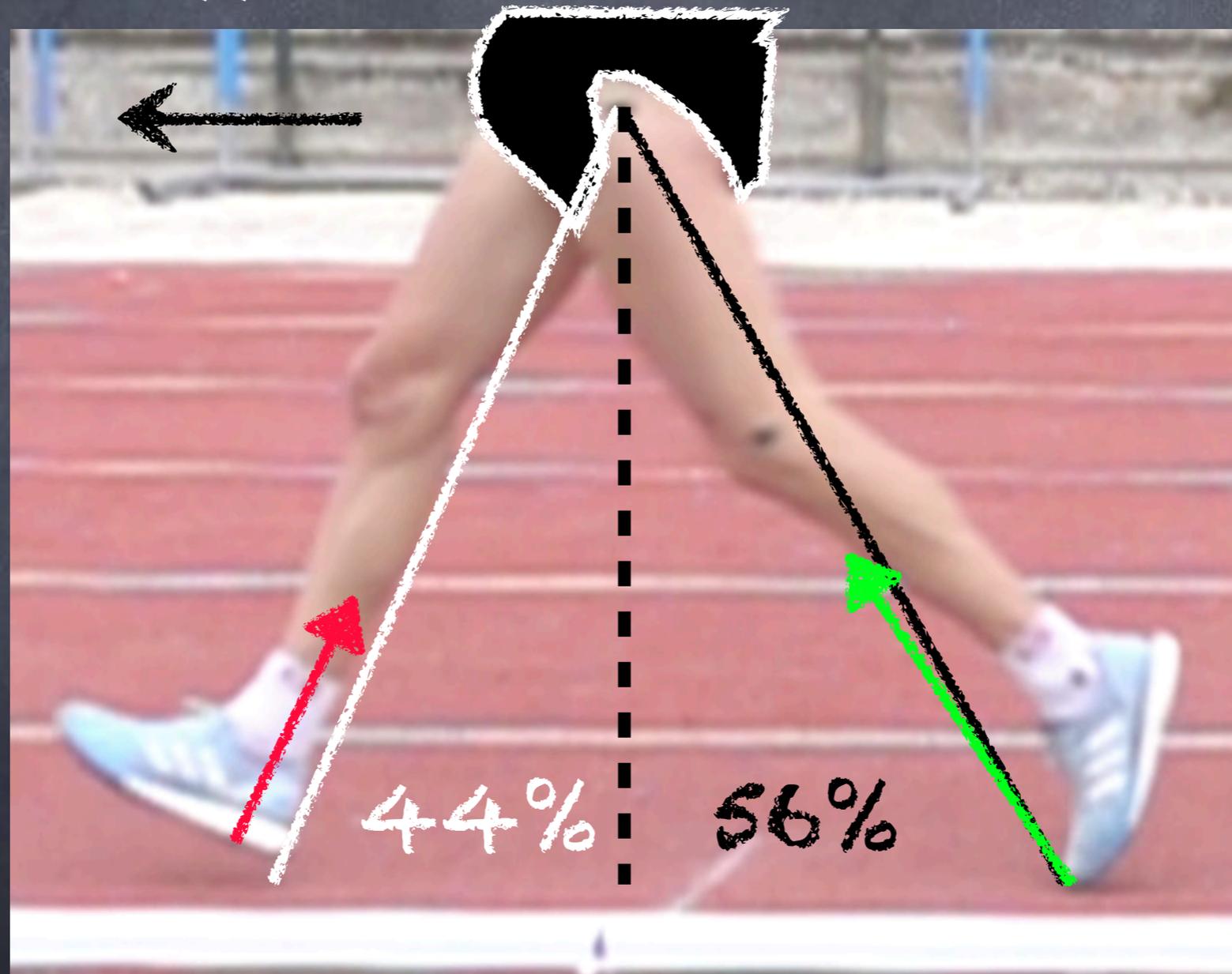
Spinta



Aggiungiamo un video

"Livello 2"

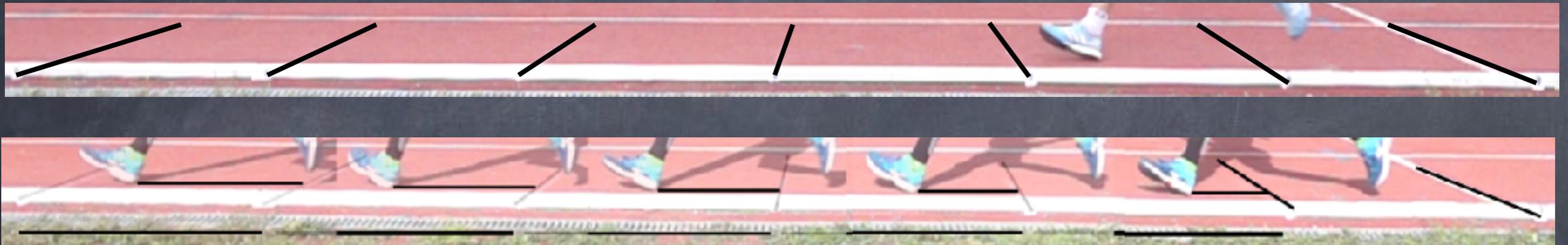
Divisione dell'Appoggio



• Hanley et al. 2011: 20 Km, 43% - 57%

Aggiungiamo un video

"Livello 2"



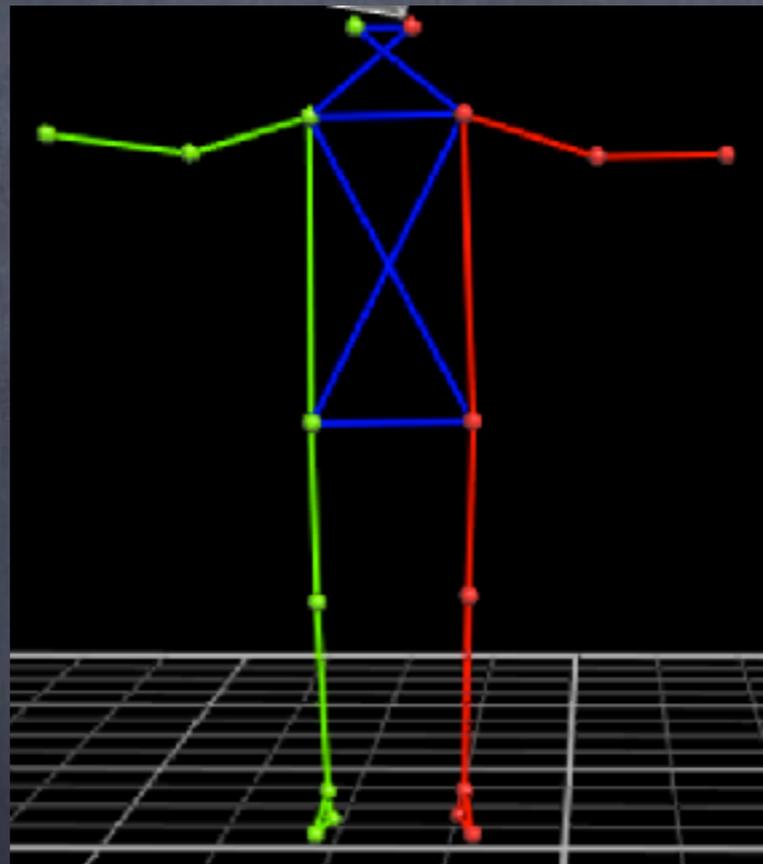
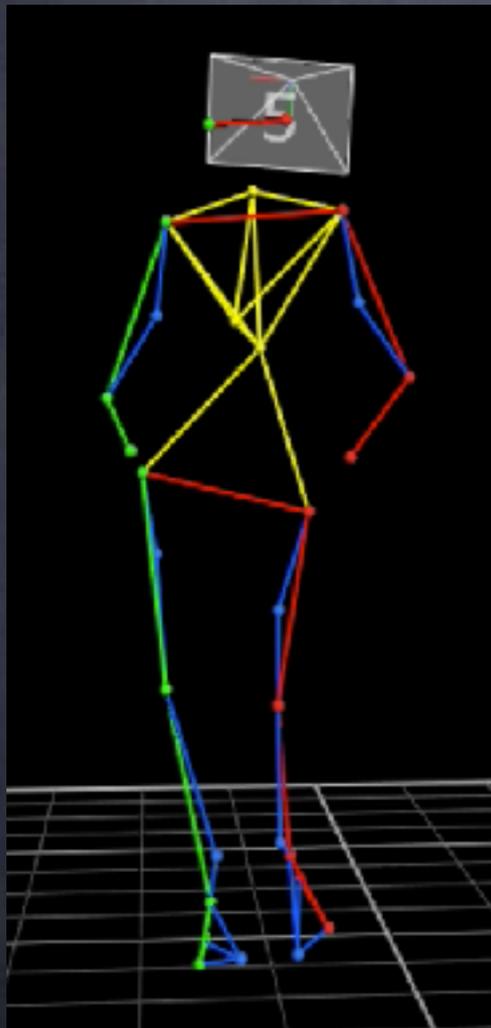
- Pixel \rightarrow metri \rightarrow Ampiezza
- Frames \rightarrow secondi \rightarrow Frequenza



- Fate qualche prova di INCERTEZZA della misura!!!

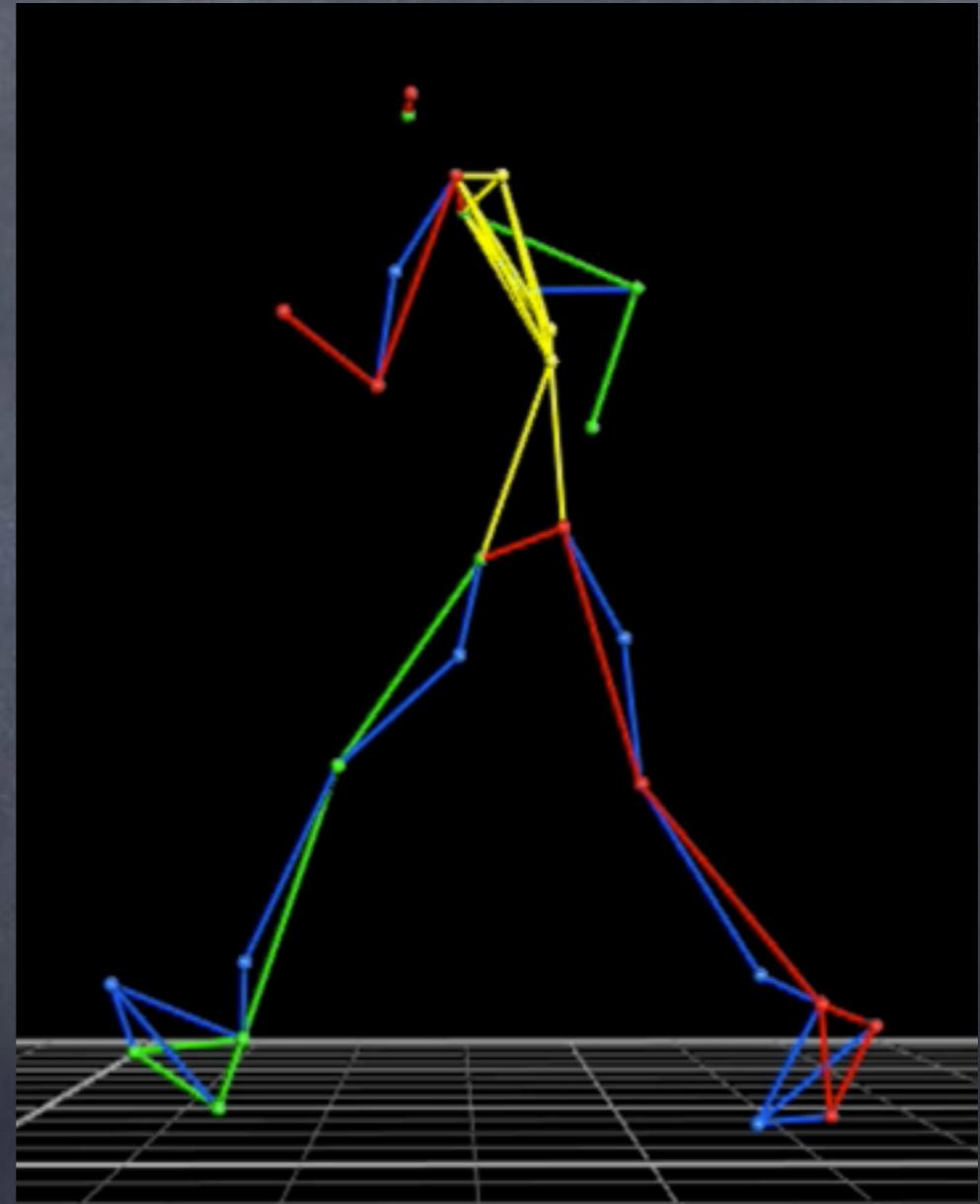
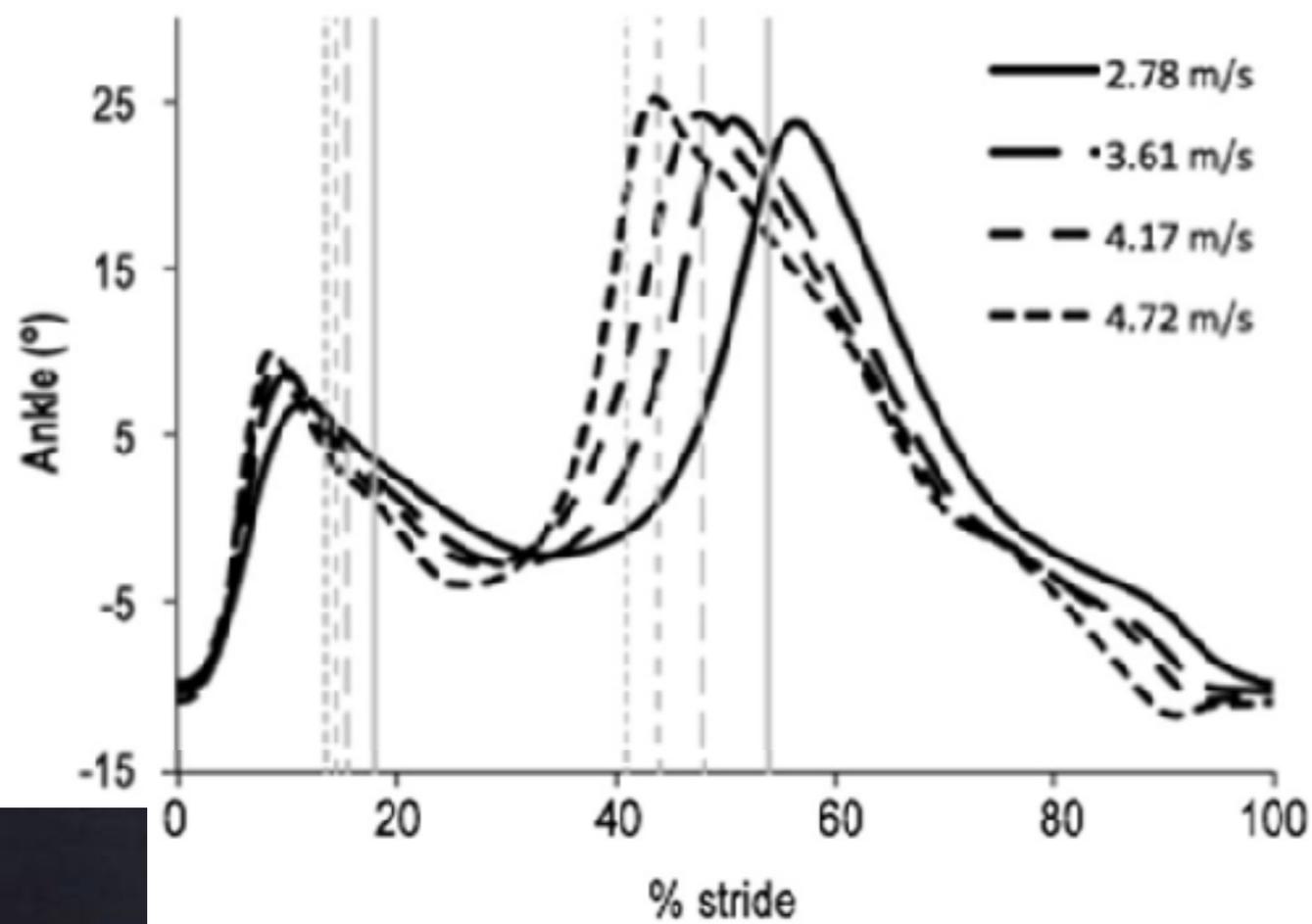
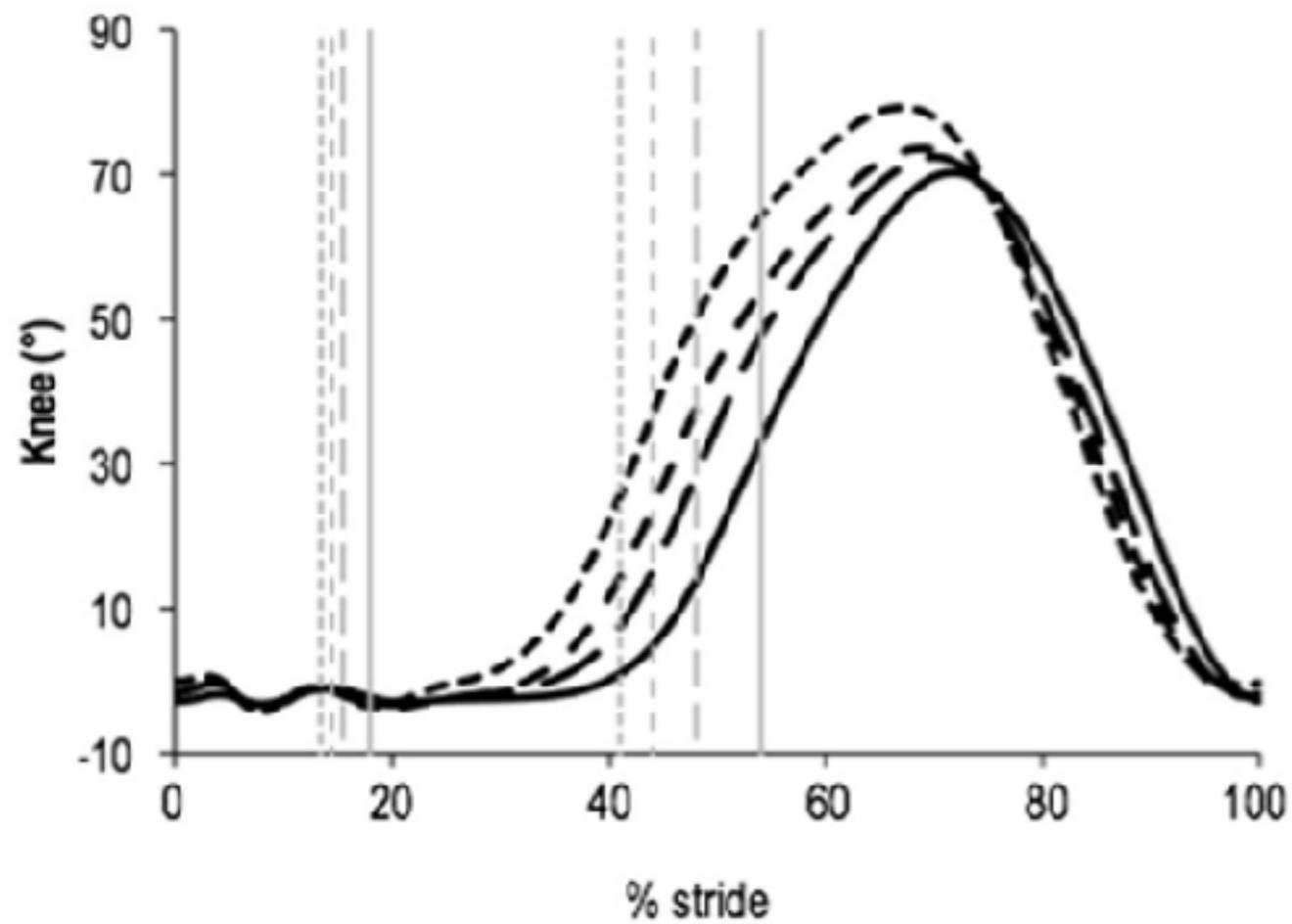
Cinematica in 3D

"Livello 3"



ca in 3D

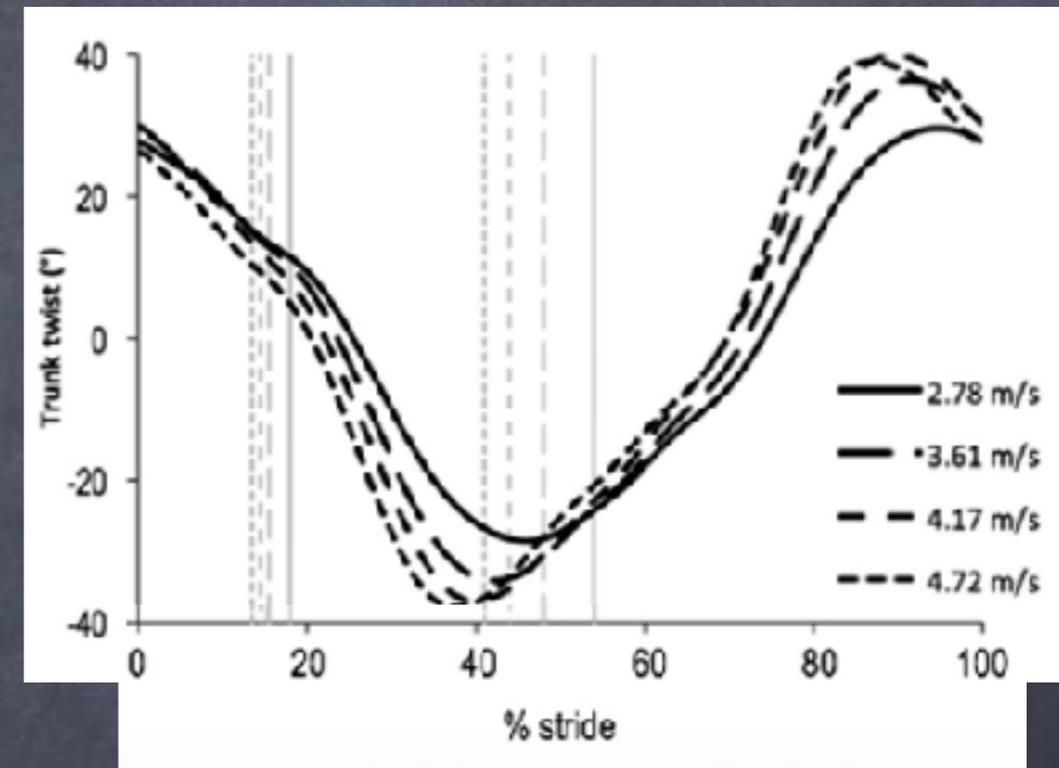
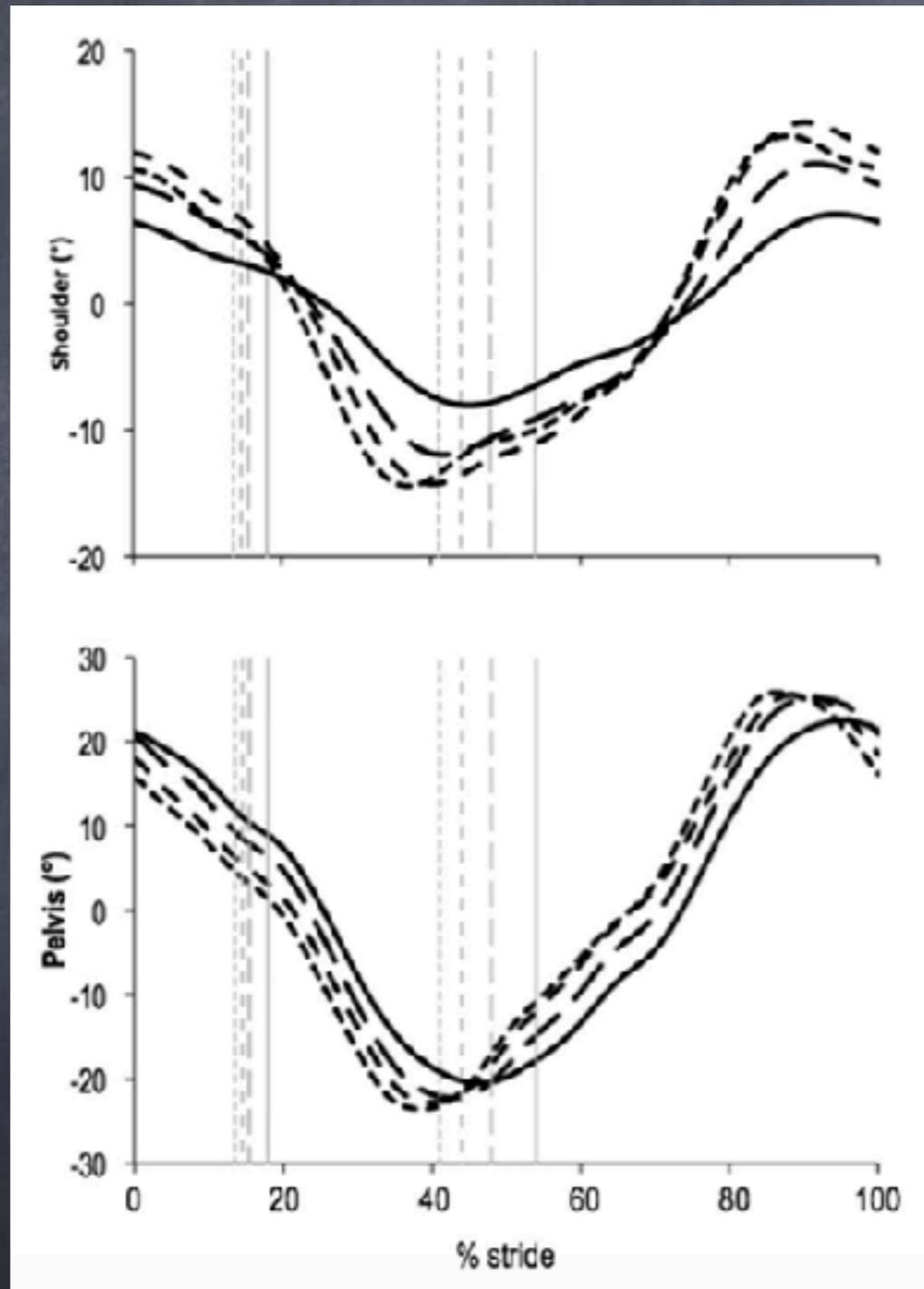
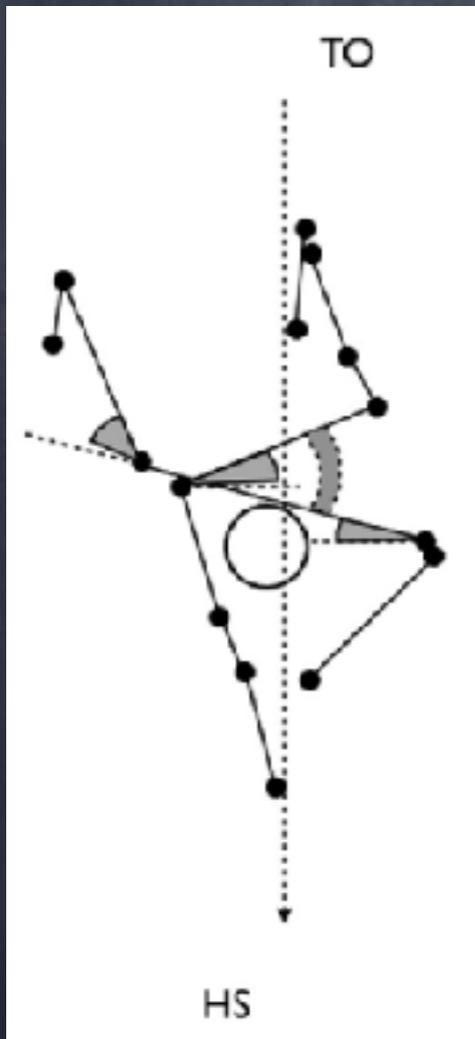
"Livello 3"

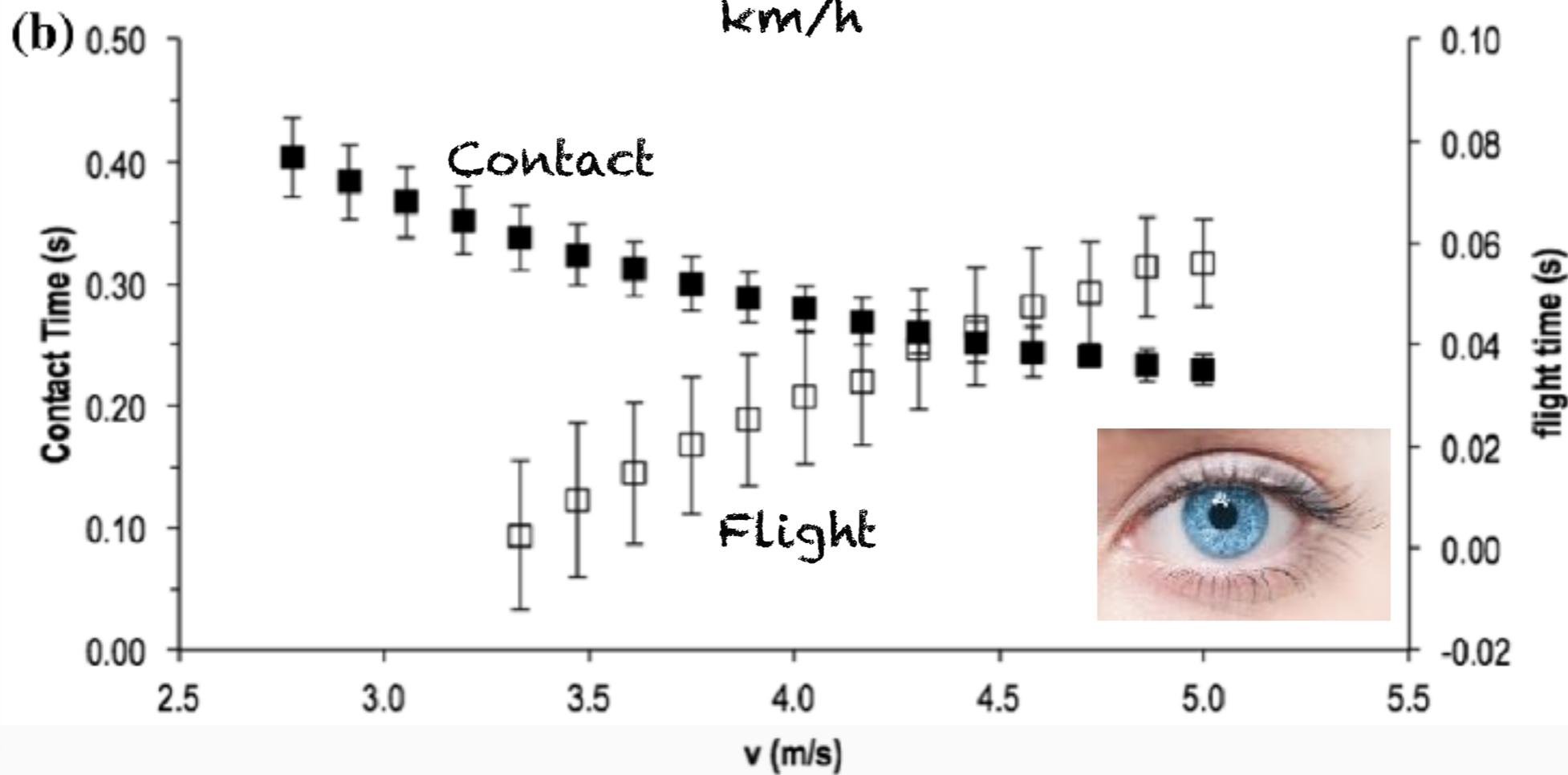
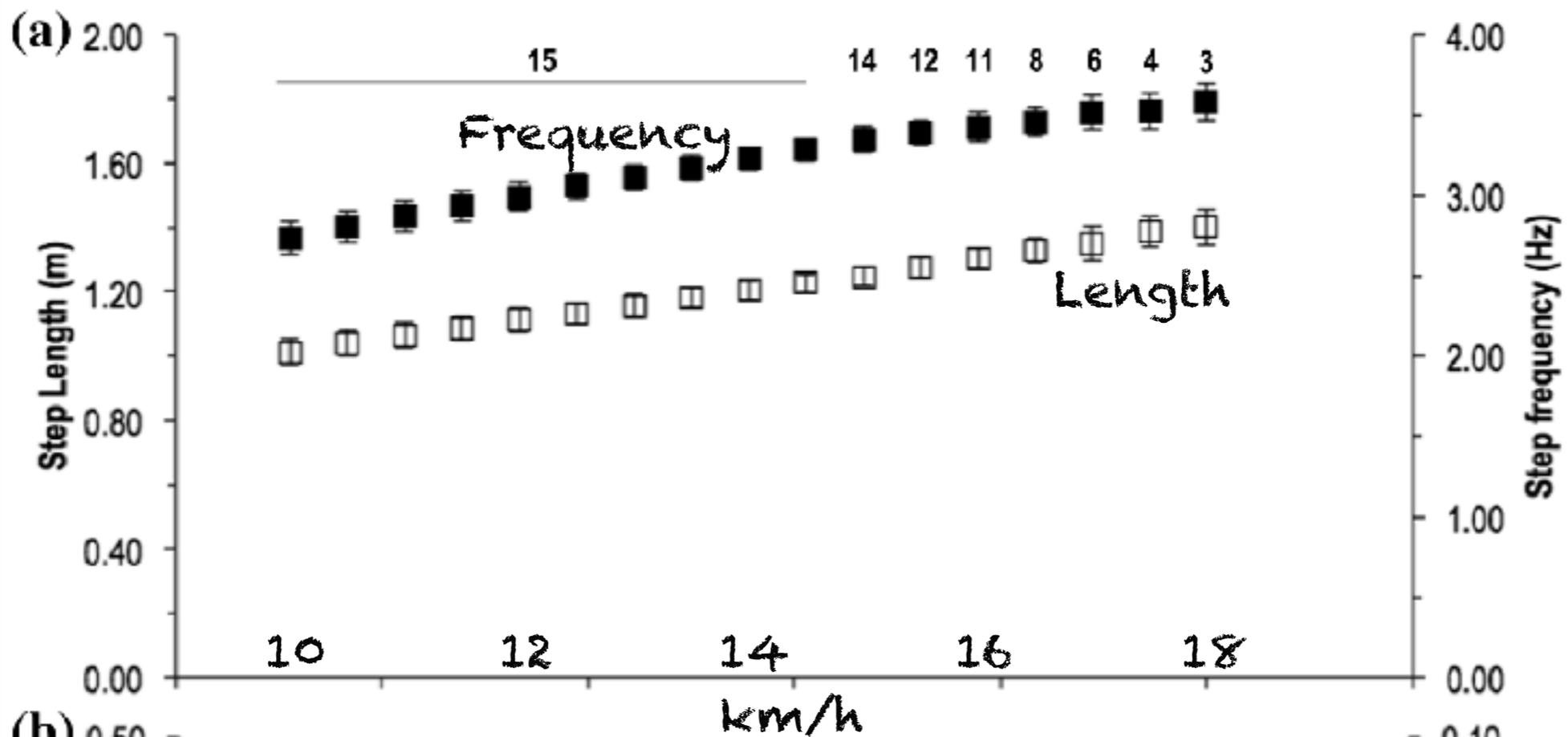


Pavei & La Torre 2016

Cinematica in 3D

"Livello 3"





Cosa controllare

"Livello 1-2"

- Angolo ginocchio da HS a verticale
- Eccessivo volo
- Asimmetrie pronunciate
- Variazioni con velocità
- Divisione dell'appoggio anteriore e posteriore
 - Nel singolo test (hic et nunc)
 - Nella stagione/carriera (longitudinale)