



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

STRUMENTI E METODOLOGIE PER L'ANALISI BIO-MECCANICA IN CONDIZIONI DINAMICHE

Massimo Milani

LABORATORIO DI ANALISI DEL MOVIMENTO

INTERMECH MO.RE.

DIPARTIMENTO DI SCIENZE E METODI DELL'INGEGNERIA

UNIVERSITA' DEGLI STUDI DI MODENA E REGGIO EMILIA

Reggio Emilia, 6 giugno 2018



LA SQUADRA



Luca Montorsi
Associate Professor



Stefano Terzi
Post-Doc



Matteo Stefani
Post-Doc



Matteo Venturelli
Junior Researcher



Pietro Marani
Ph.D. Student



Fabrizio Paltrinieri
Assistant Professor



Marco Francia
Post-Doc



Gabriele Storchi
Junior Researcher



Luca Fontanili
Junior Researcher

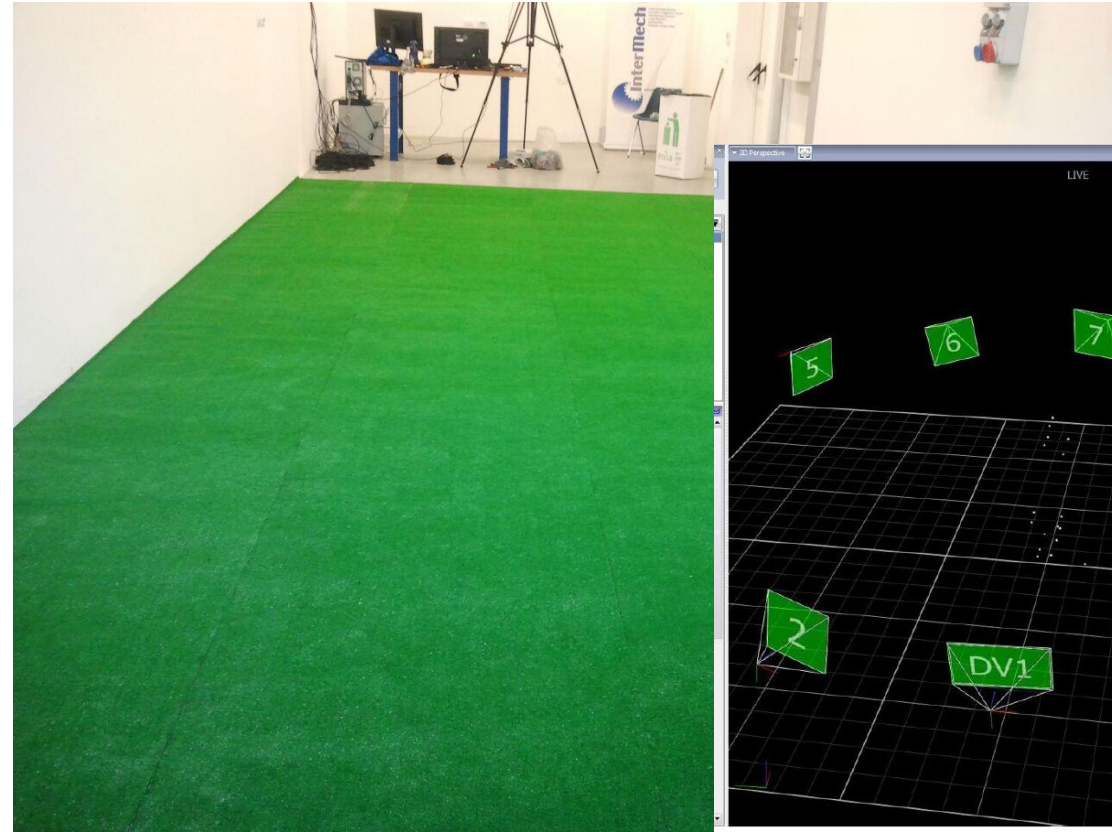


Raffaele Babbone
Industrial Ph.D. Student

2014 – GAIT & MOTION ANALYSIS LAB

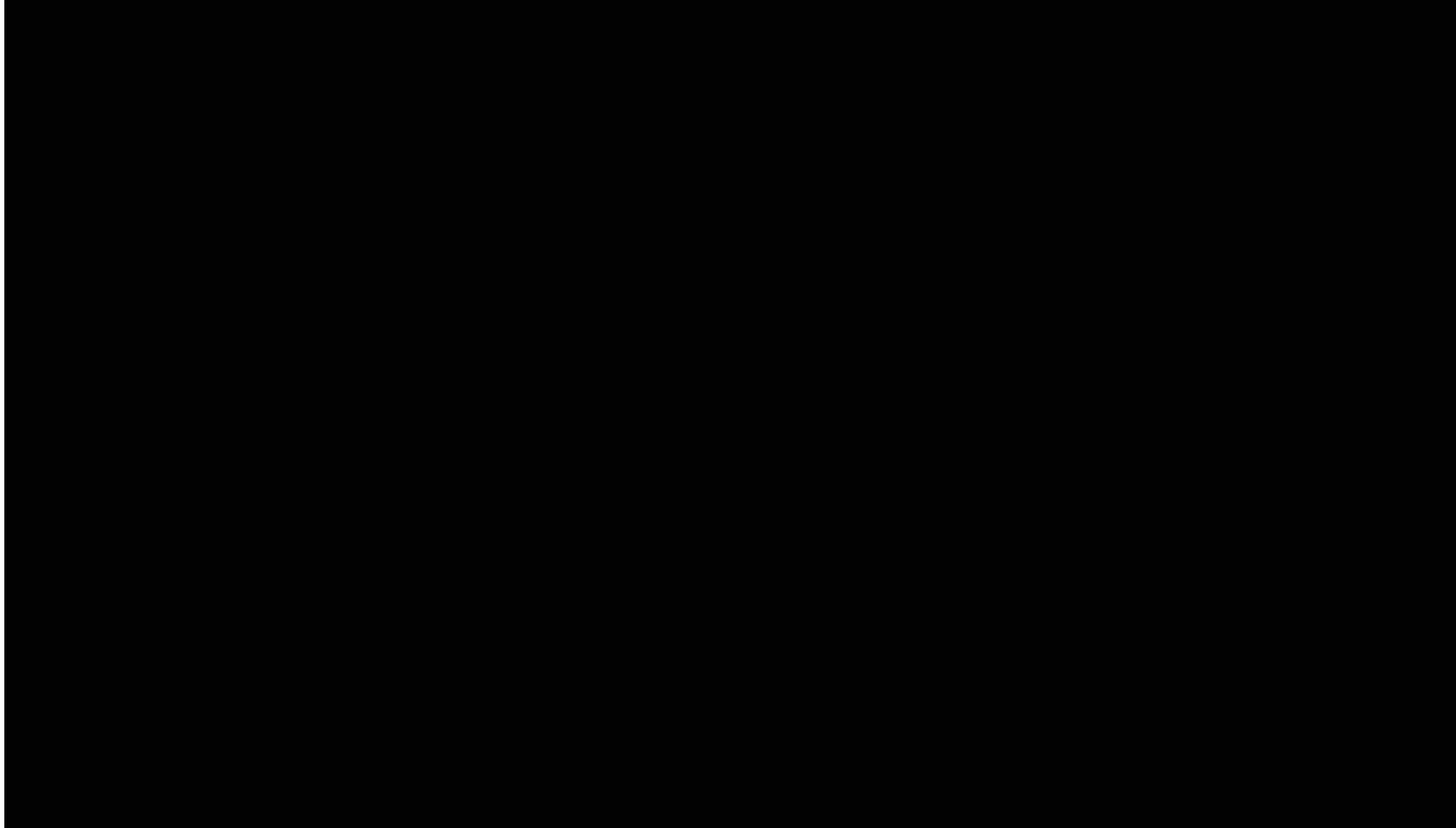


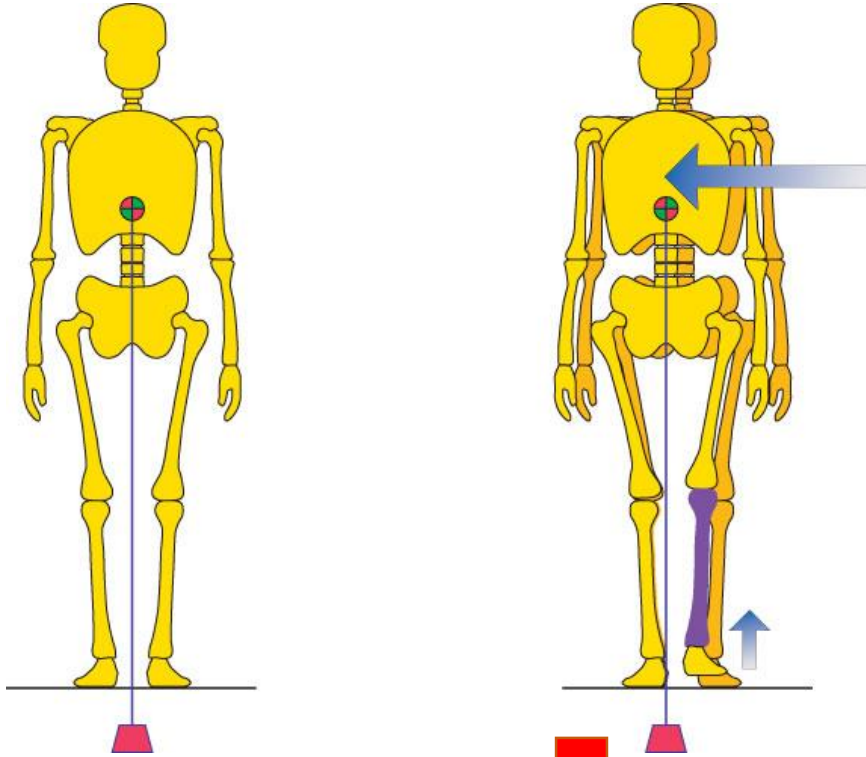
12 IR CAMERAS
2 HDD CAMERAS
2 IR THERMOCAMERAS
«PARALLEL» CLUSTER





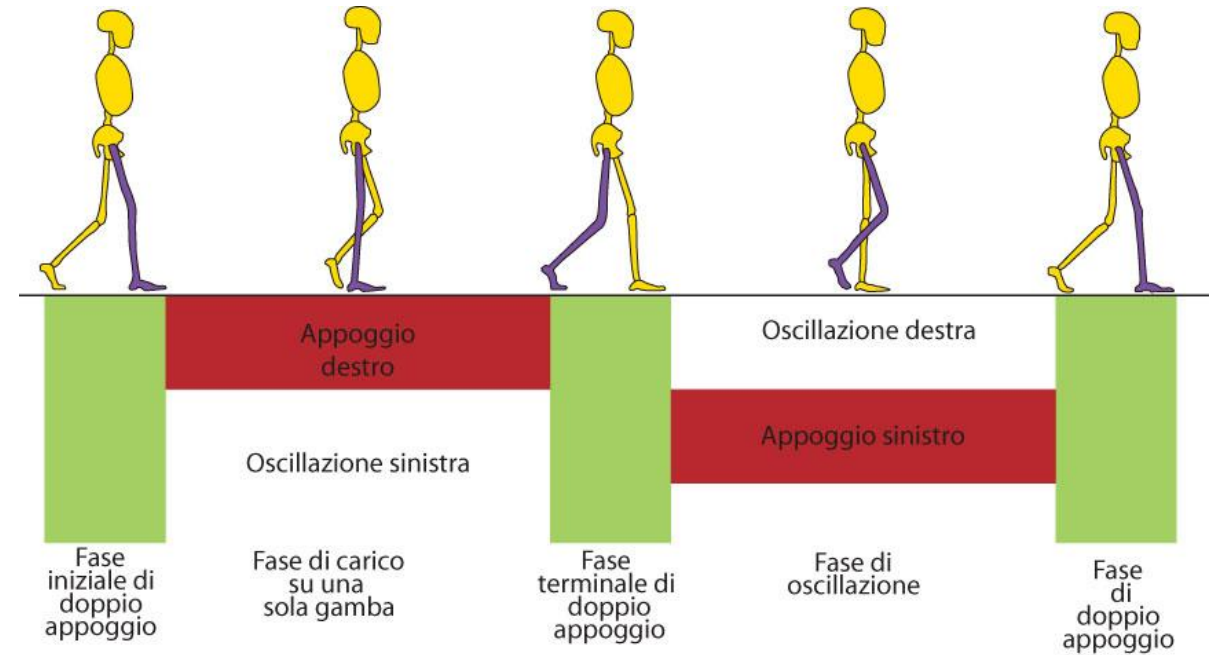
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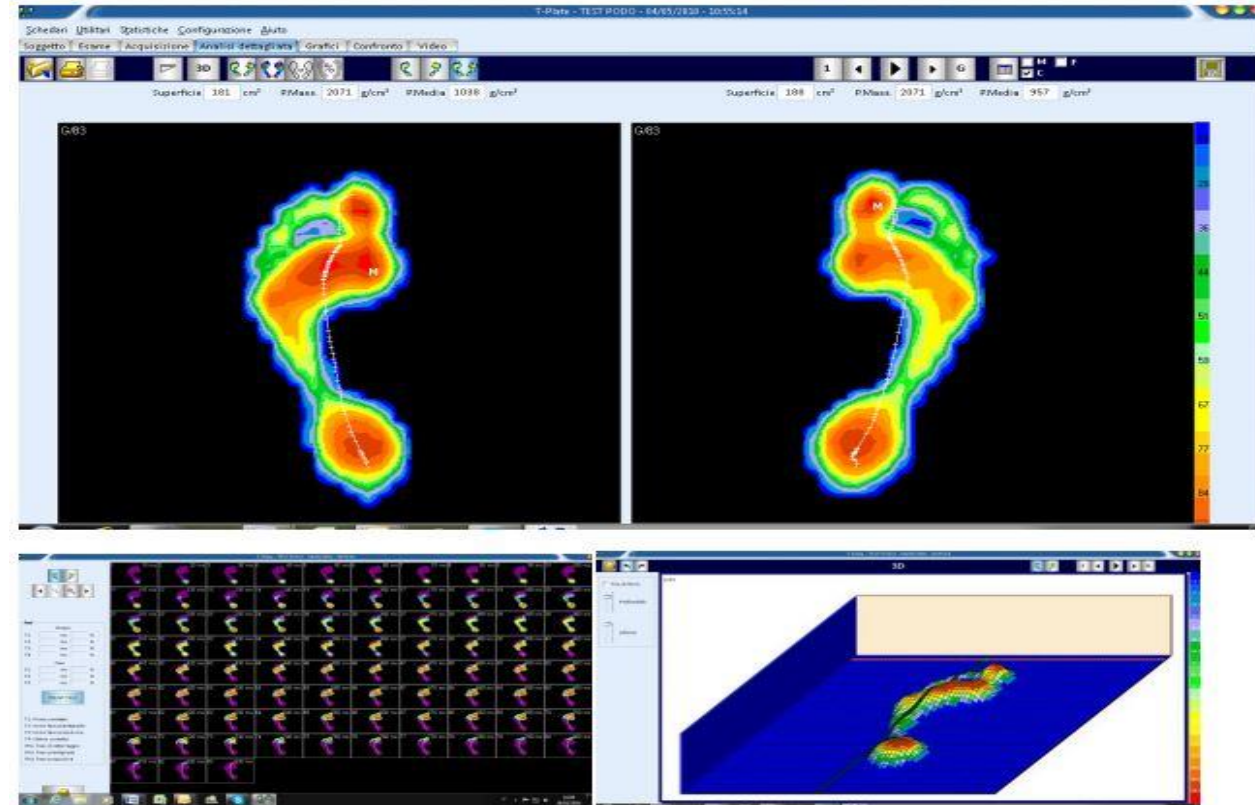
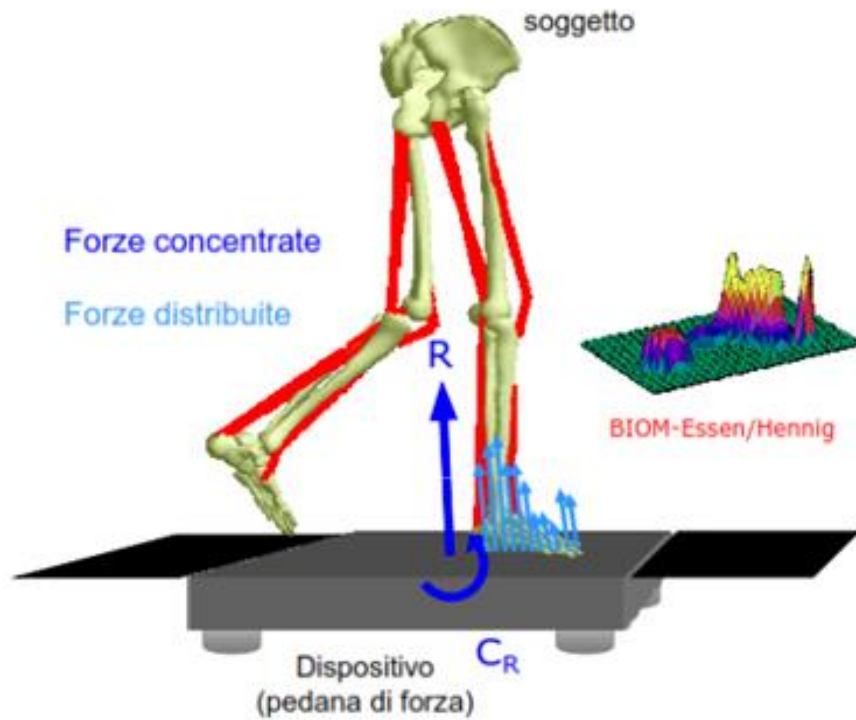


$$F = m \cdot g$$

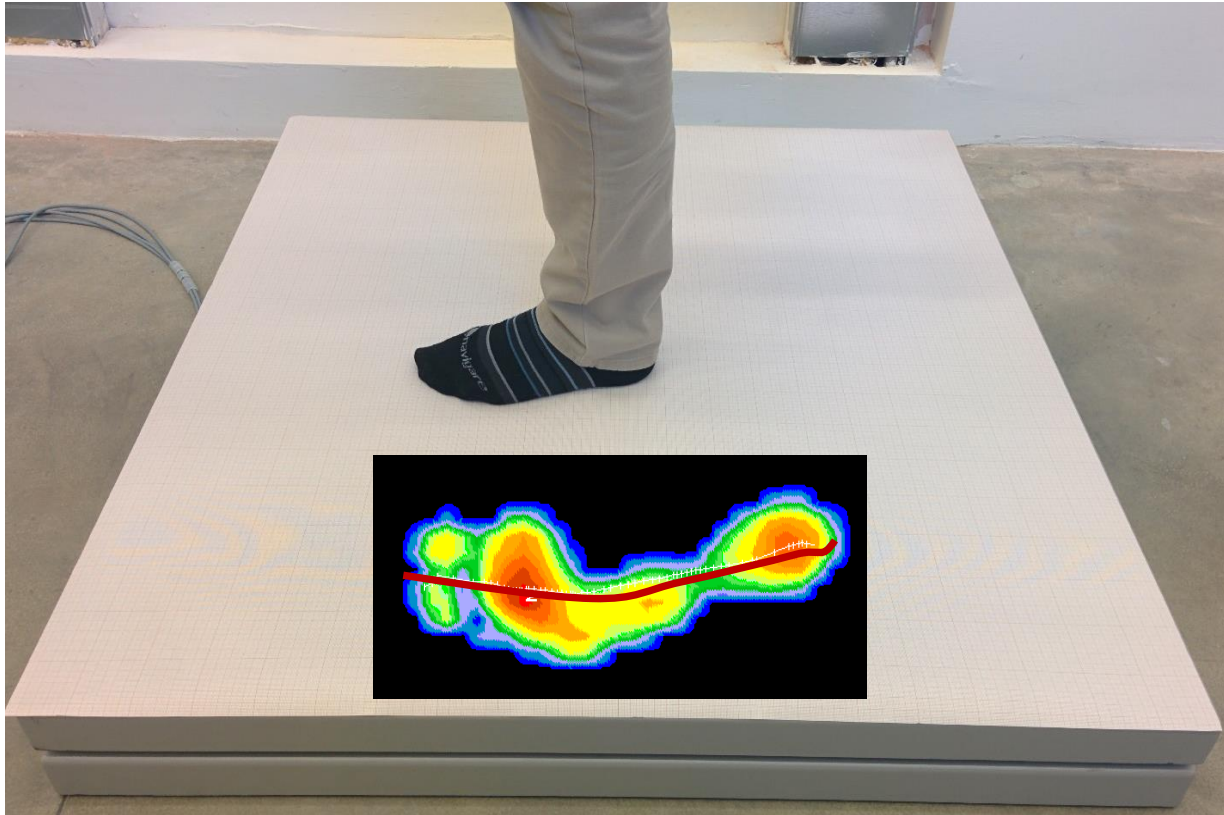
ANALISI DELL'INTERAZIONE CORPO - TERRENO

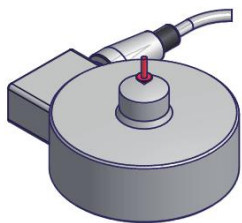
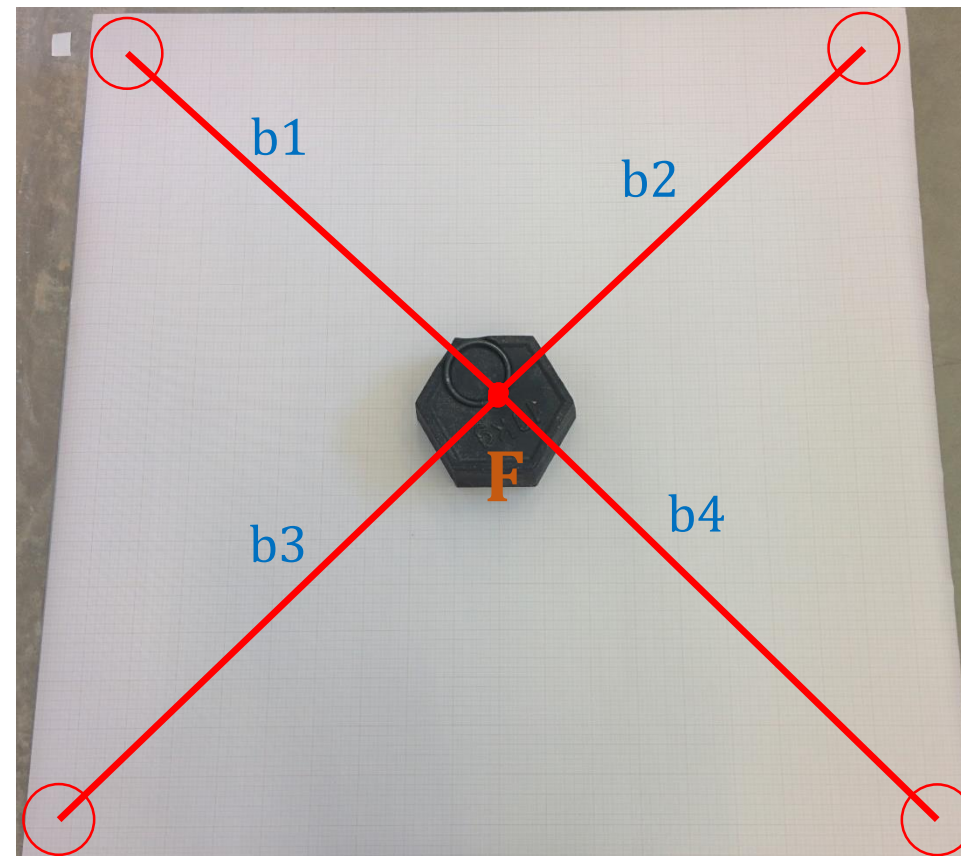
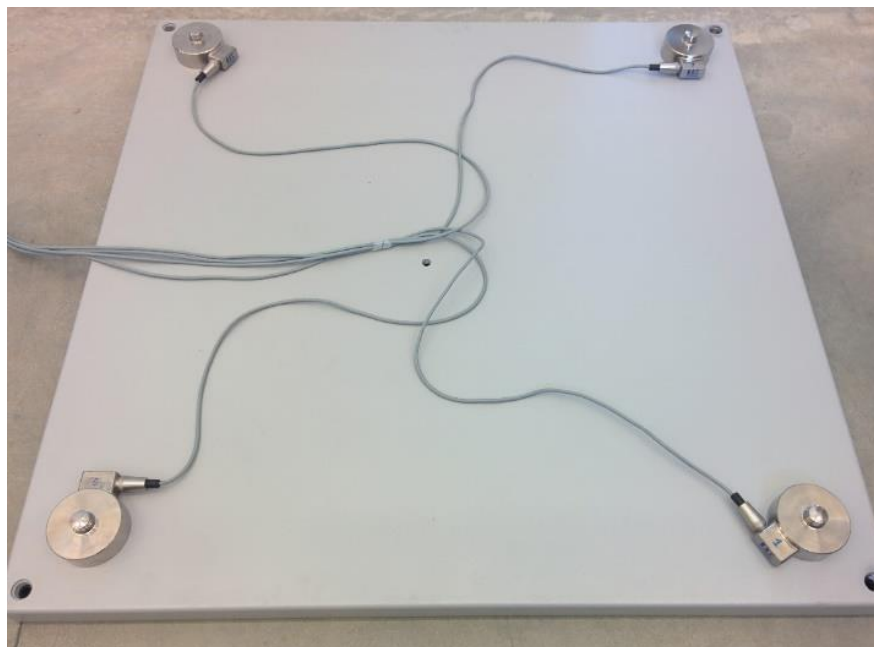


DYNAMIC POSTURAL ANALYSIS

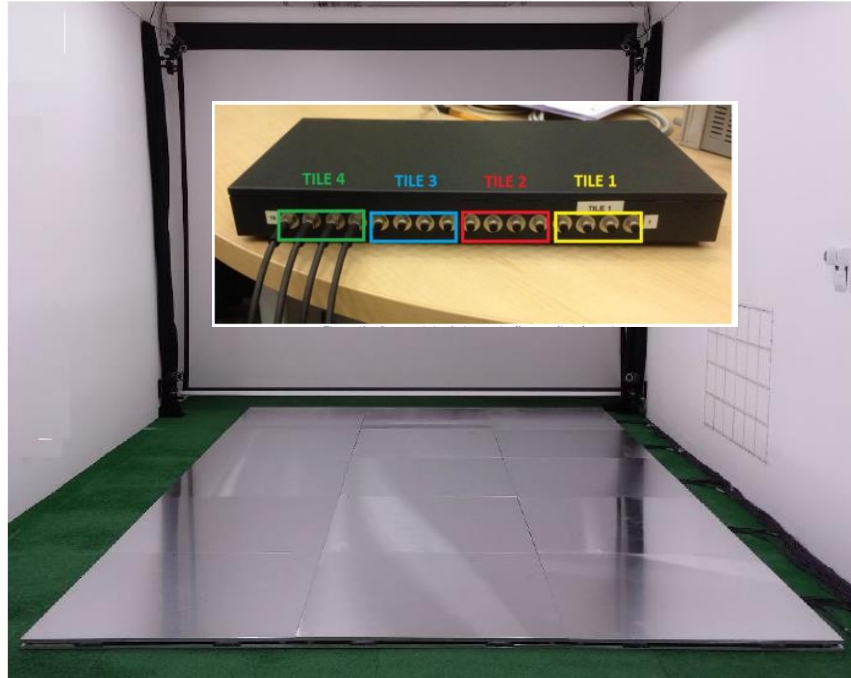


LA SCELTA PROGETTUALE

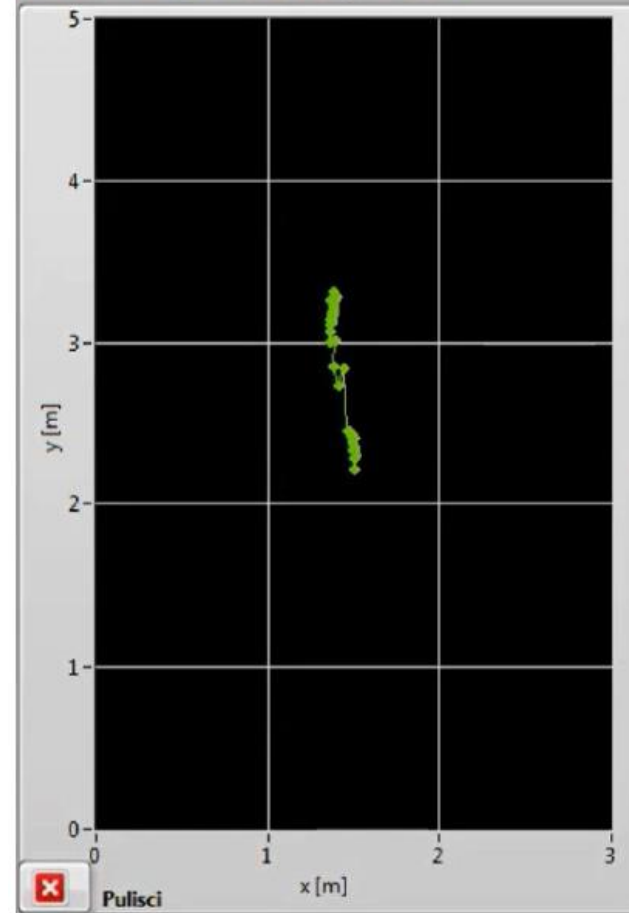




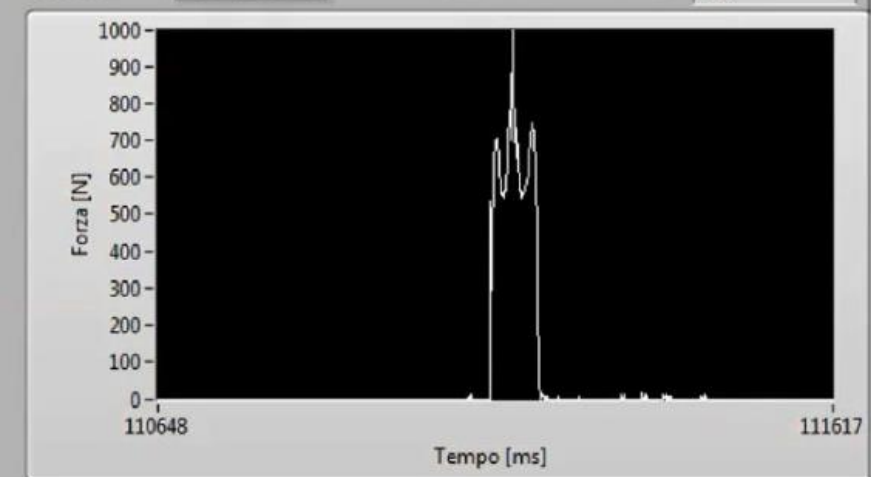
Portata	500 kg
Materiale	Acciaio inox
Grado di protezione	IP 68
Uscita a f.s.	2 mV/V ± 0.1%
Errore	<± 0.08%



Posizione del centro di pressione



GRF



Controls

77USB??

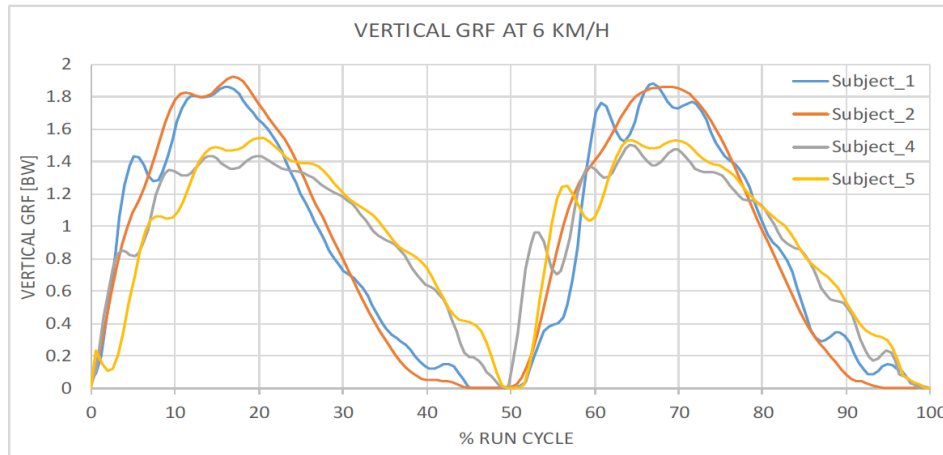
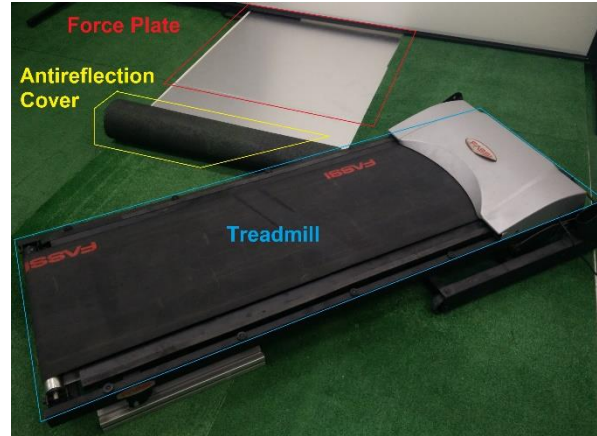
Connect Zero Start

Sample Frequency: 0.2 Hz

Acquisition Timer: 00h 00m 00s

Tile 1		Tile 2		Tile 3		Tile 4	
000000	kg	000000	kg	000000	kg	000000	kg
000000	kg	000000	kg	000000	kg	000000	kg
000000	kg	000000	kg	000000	kg	000000	kg
000000	kg	000000	kg	000000	kg	000000	kg
000000	Tot	000000	Tot	000000	Tot	000000	Tot

RICERCA



RICERCA

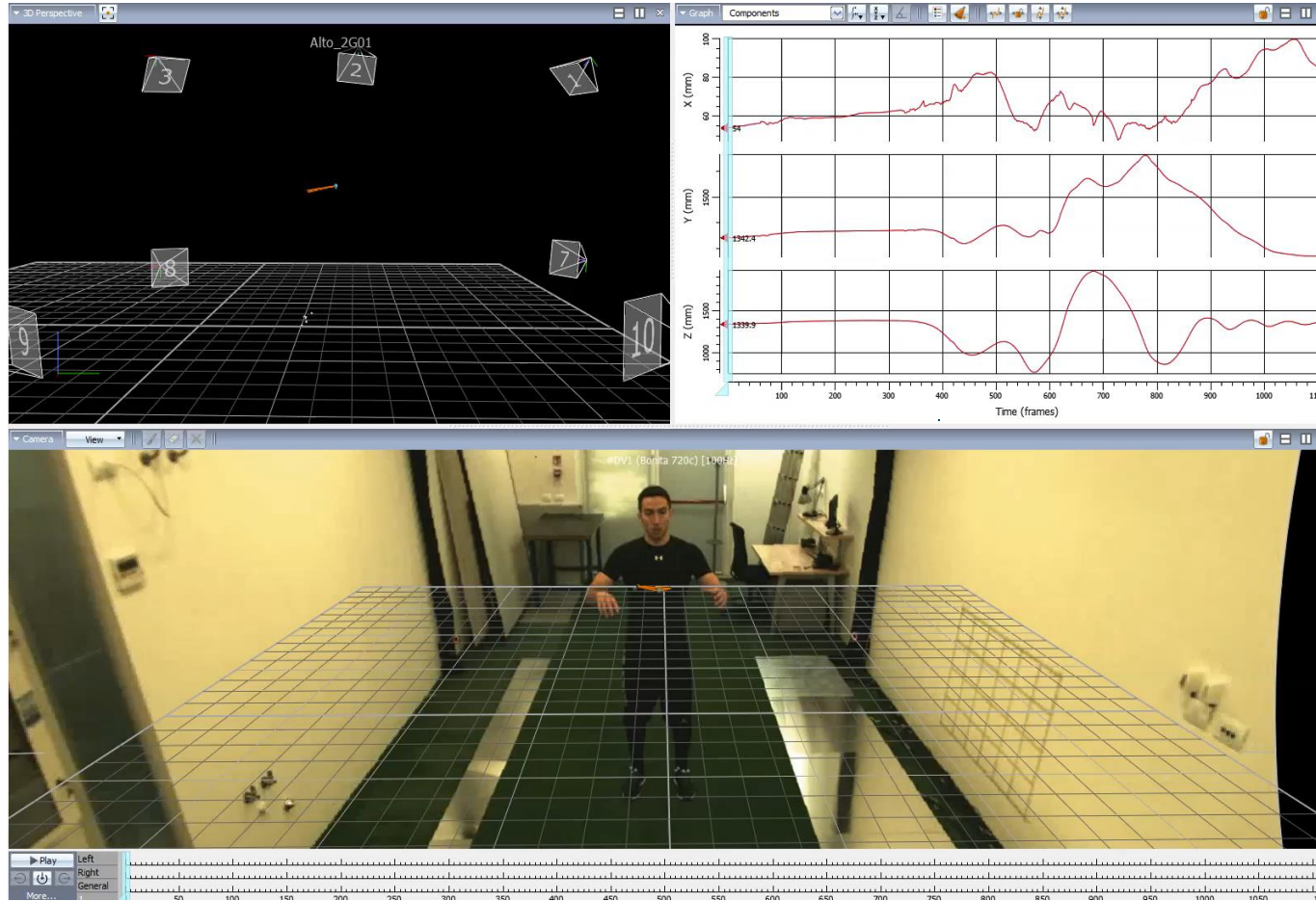


DIEF – Laboratorio di Tecnica delle Costruzioni



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PREPARAZIONE
ATLETICA



SALVATORE ROSSINI

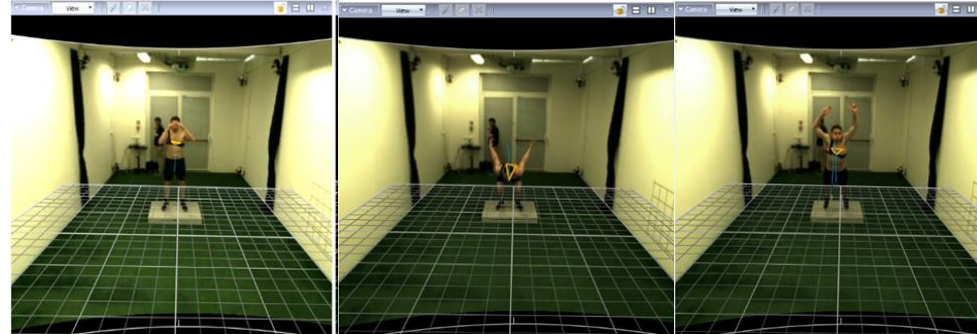


Reggio Emilia, 6 maggio 2018



	Lungo 2G		
	I	II	III
Tempo di carico	0.20 s	0.30 s	0.20 s
Forza Rif Max	1892.47 N	2205.95 N	2096.72 N
Tempo di distacco	0.25 s	0.05 s	0.35 s
Forza Rif Media	1198.29 N	1426.42 N	1397.94 N
Tempo Rif	0.45 s	0.35 s	0.55 s

e = 58 – 70 %

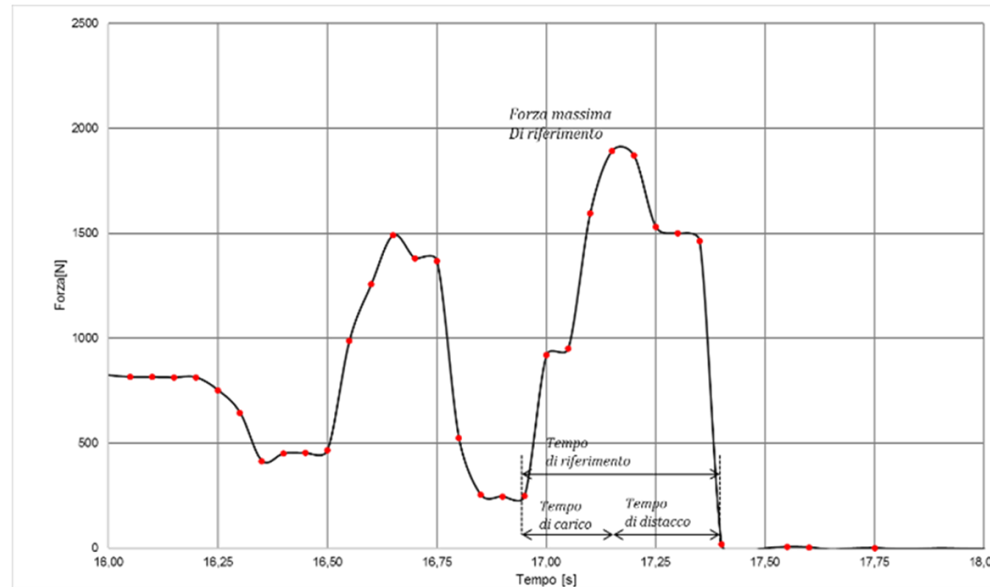


	Alto 2G		
	I	II	III
Tempo di carico	0.20 s	0.20 s	0.10 s
Forza Rif Max	2413.19 N	2385.89 N	2361.94 N
Tempo di distacco	0.30 s	0.25 s	0.30 s
Forza Rif Media	1374.85 N	1642.29 N	1442.08 N
Tempo Rif	0.50 s	0.45 s	0.40 s

e = 55 – 60 %

	Lunga Gamba Sx		
	I	II	III
Tempo di carico	0.50 s	0.40 s	0.35 s
Forza Rif Max	1559.17 N	1648.57 N	1747.33 N
Tempo di distacco	0.20 s	0.15 s	0.10 s
Forza Rif Media	983.71 N	1021.86 N	1107.99 N
Tempo Rif	0.70 s	0.55 s	0.45 s

e = 75 – 85 %



	Alto Gamba Sx		
	I	II	III
Tempo di carico	0.35 s	0.45 s	0.45 s
Forza Rif Max	1862.17 N	1916.04 N	1779.50 N
Tempo di distacco	0.15 s	0.10 s	0.10 s
Forza Rif Media	1021.89 N	952.19 N	1083.21 N
Tempo Rif	0.50 s	0.55 s	0.55 s

e = 70 – 85 %

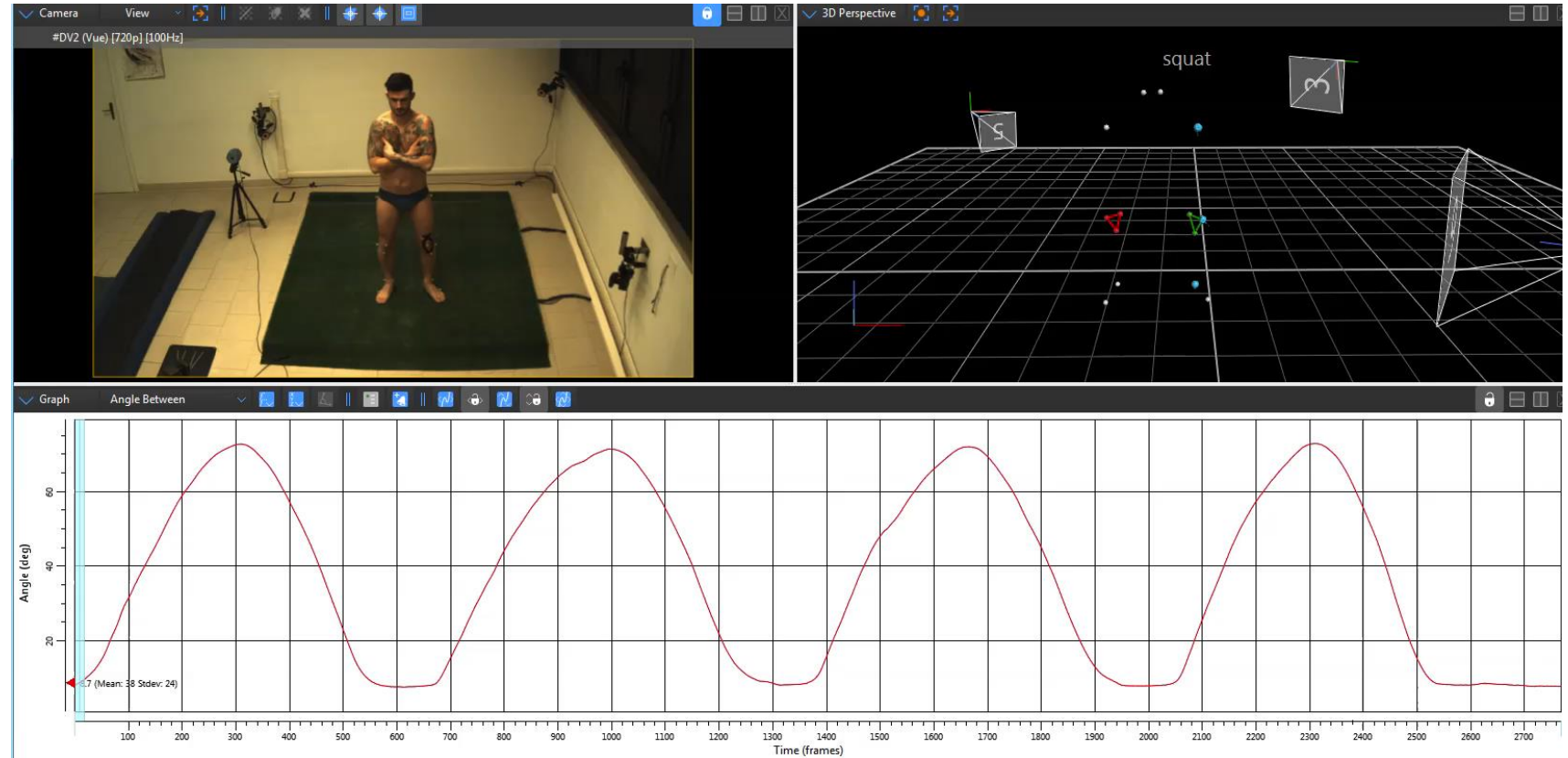
	Lungo Gamba Dx		
	I	II	III
Tempo di carico	0.35 s	0.40 s	0.35 s
Forza Rif Max	1655.31 N	1569.27 N	1723.85 N
Tempo di distacco	0.25 s	0.10 s	0.05 s
Forza Rif Media	992.98 N	1046.34 N	1080.07 N
Tempo Rif	0.60 s	0.50 s	0.40 s

	Alto Gamba Dx		
	I	II	III
Tempo di carico	0.15 s	0.15 s	0.20 s
Forza Rif Max	1912.30 N	1859.93 N	1941.10 N
Tempo di distacco	0.25 s	0.50 s	0.25 s
Picco in atterraggio	1269.96 N	1283.58 N	1406.54 N
Tempo Rif	0.40 s	0.65 s	0.45 s

RIABILITAZIONE



Laboratorio di Analisi Posturale
e del Movimento

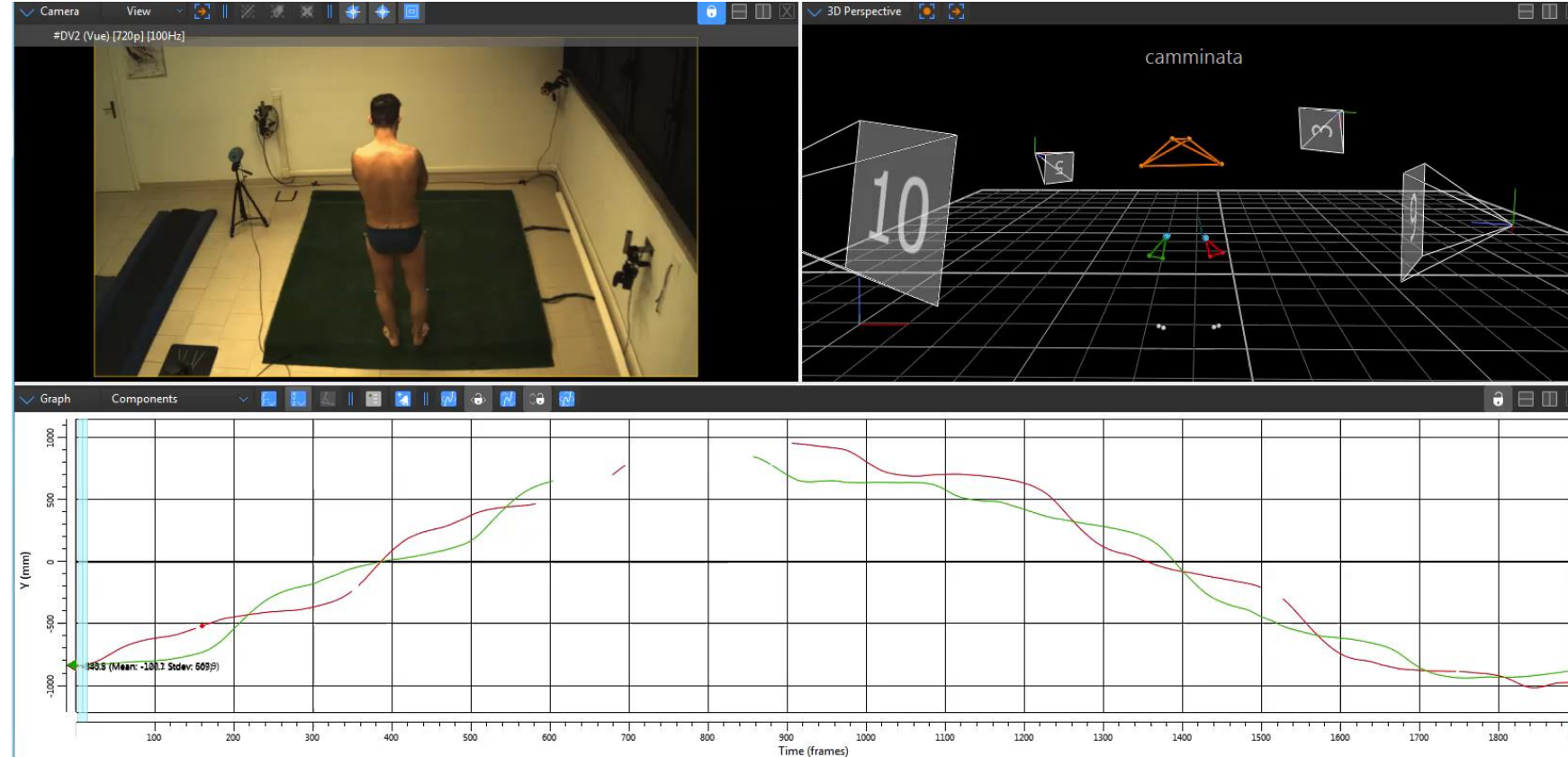


Squat – angolo ginocchio SX

RIABILITAZIONE



Laboratorio di Analisi Posturale
e del Movimento



Camminata – spostamento sagittale rotula

GAMING, FITNESS & ERGONOMICS





Grazie per
l'attenzione!



MASSIMO.MILANI@UNIMORE.IT – 331 6350514