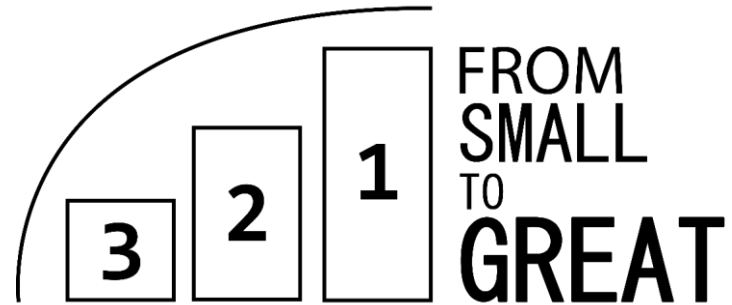




INNOSPORTLAB 'S-HERTOGENBOSCH

INNOVATION IN GYMNASTICS



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Den Bosch, February 21st 2020

ELITE SPORTS INNOVATION CENTRES





NTC MAG
RTC WAG



Maurice Aarts

*Labmanager
Human Movement Scientist*





Arno Pluk
*Embedded scientist
Informatics engineer*



OUR MISSION

*to innovate & support
Artistic Gymnastics*

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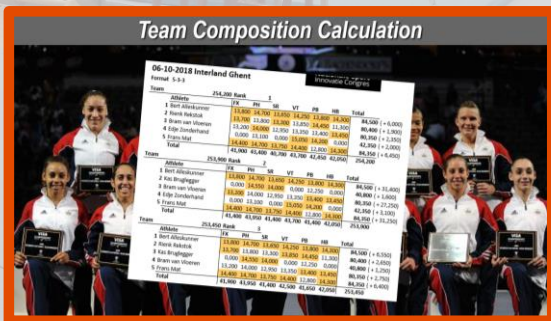
TEAM & FACILITIES



- 1 Labmanager / 1 Embedded Scientist / 2 data-analysts
- Human Movement Science / Informatics / Movement technology / Physical Education / Gymnastics coaches / FIG International Jury member (cat II)
- Interns (# variable) from universities, professional education en middle education

- own labroom (~ 100 m²) on 2nd floor with central server
- 4 training halls (equiped)
- ~ € 500.000,- measurement & test systems/ -equipment / software (mobile & installed)
- Broad network with knowledge institutes, businesses, sports institutes (network)
- National and international





INNOVATION & SUPPORT



Koninklijke Nederlandse Gymnastiek Unie



janssen·fritsen



SPIETH
Gymnastics



CTO

CENTRUM VOOR
TOPSPORT EN
ONDERWIJS

ZUID

ONDERDEEL VAN BRABANTSPORT



EX #1

Direct video support in training practice





...to advance and develop the sport.

EX #2

CameraDelay – dedicated video software



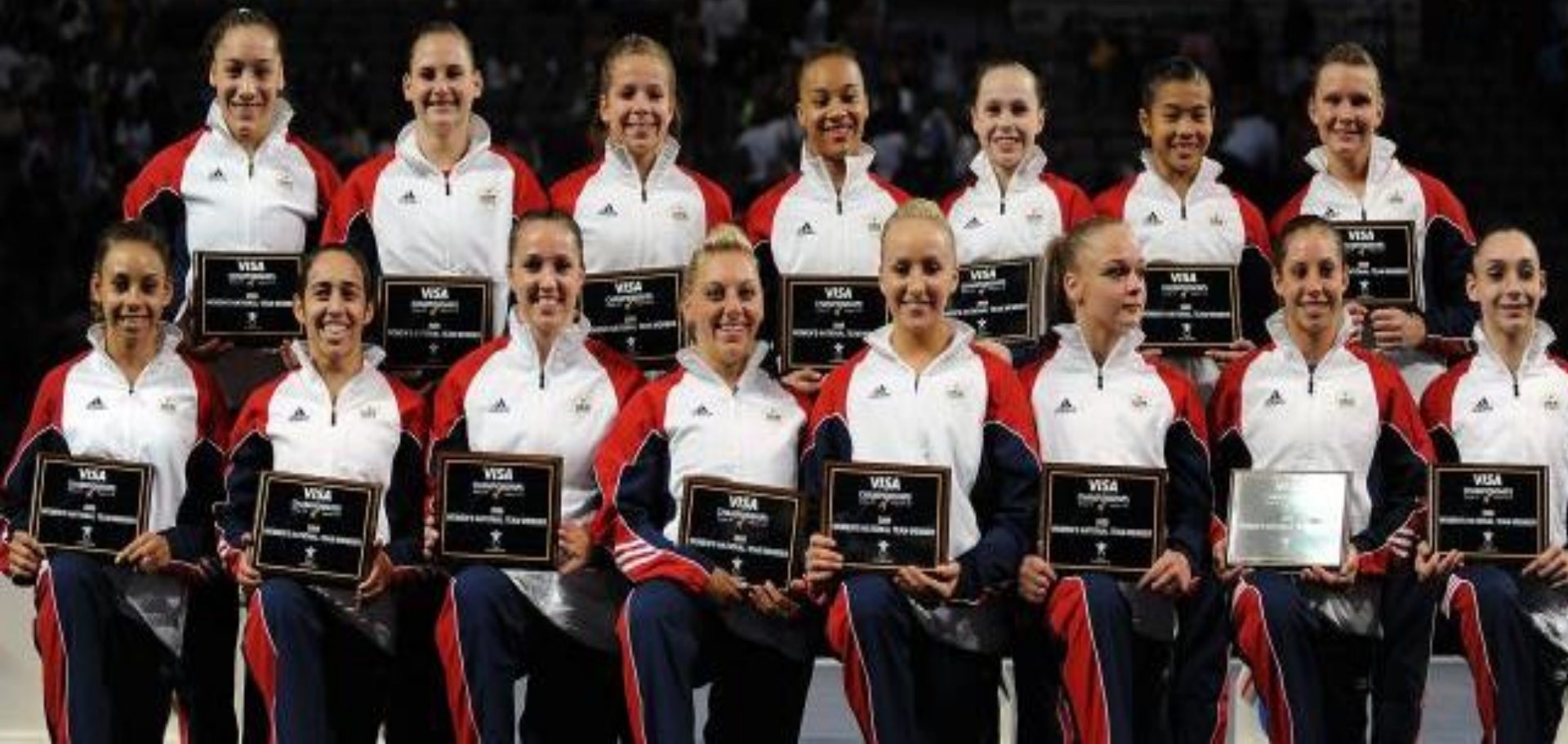
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**BRAM
VERHOFSTAD**

Elite gymnast



EX #3 *Team Composition Calculation*





If you have to send 5, who would you pick?

06-10-2018 Interland Ghent

1		FX	PH	SR	VT	PB	HB	TOT	ranking
2	Bert Alleskunner	13,80	14,70	13,65	14,25	13,80	14,30	84,50	1
3	Rienk Rekstok	13,70	13,80	13,30	13,85	14,45	11,30	80,40	3
4	Kas Bruglegger	0,00	14,55	14,00	0,00	12,25	0,00	40,80	9
5	Bram van Vloeren	13,20	14,00	12,95	13,35	13,40	13,45	80,35	4
6	Maikel Sprong	13,25	12,65	12,20	14,05	11,70	12,85	76,70	5
7	Ton Sprong	11,45	11,70	13,65	13,30	13,30	0,00	63,40	6
8	Siemen Stuiterbal	13,75	9,90	0,00	14,15	0,00	11,40	49,20	7
9	Edje Zonderhand	0,00	13,10	0,00	15,05	14,20	0,00	42,35	8
10	Tony Spierbal	0,00	14,00	13,85	0,00	0,00	0,00	27,85	10
11	Frans Mat	14,40	14,70	13,75	14,40	12,80	14,30	84,35	2

06-10-2018 Interland Ghent

Format 5-3-3

Team	254,200 Rank 1						
Athlete	FX	PH	SR	VT	PB	HB	Total
1 Bert Alleskunner	13,800	14,700	13,650	14,250	13,800	14,300	84,500 (+ 6,000)
2 Rienk Rekstok	13,700	13,800	13,300	13,850	14,450	11,300	80,400 (+ 1,900)
3 Bram van Vloeren	13,200	14,000	12,950	13,350	13,400	13,450	80,350 (+ 2,350)
4 Edje Zonderhand	0,000	13,100	0,000	15,050	14,200	0,000	42,350 (+ 2,000)
5 Frans Mat	14,400	14,700	13,750	14,400	12,800	14,300	84,350 (+ 6,450)
Total	41,900	43,400	40,700	43,700	42,450	42,050	254,200

Team	253,900 Rank 2						
Athlete	FX	PH	SR	VT	PB	HB	Total
1 Bert Alleskunner	13,800	14,700	13,650	14,250	13,800	14,300	84,500 (+ 31,400)
2 Kas Bruglegger	0,000	14,550	14,000	0,000	12,250	0,000	40,800 (+ 1,600)
3 Bram van Vloeren	13,200	14,000	12,950	13,350	13,400	13,450	80,350 (+ 27,250)
4 Edje Zonderhand	0,000	13,100	0,000	15,050	14,200	0,000	42,350 (+ 3,100)
5 Frans Mat	14,400	14,700	13,750	14,400	12,800	14,300	84,350 (+ 31,250)
Total	41,400	43,950	41,400	43,700	41,400	42,050	253,900

Team	253,450 Rank 3						
Athlete	FX	PH	SR	VT	PB	HB	Total
1 Bert Alleskunner	13,800	14,700	13,650	14,250	13,800	14,300	84,500 (+ 6,550)
2 Rienk Rekstok	13,700	13,800	13,300	13,850	14,450	11,300	80,400 (+ 2,650)
3 Kas Bruglegger	0,000	14,550	14,000	0,000	12,250	0,000	40,800 (+ 1,250)
4 Bram van Vloeren	13,200	14,000	12,950	13,350	13,400	13,450	80,350 (+ 2,750)
5 Frans Mat	14,400	14,700	13,750	14,400	12,800	14,300	84,350 (+ 6,400)
Total	41,900	43,950	41,400	42,500	41,650	42,050	253,450

EX #4 Cable tension: Controlling cable tension on High Bar





loading the High Bar...



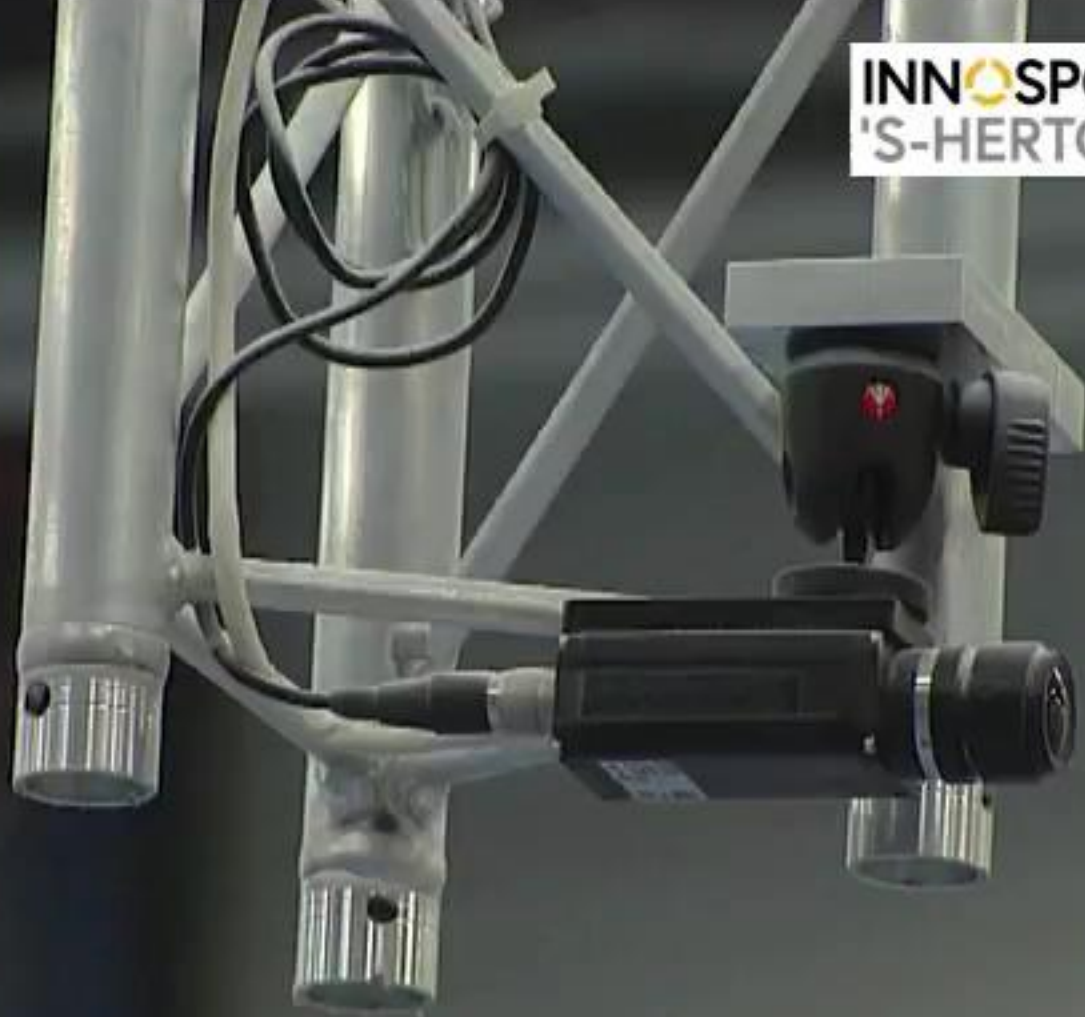


EX #5 *Testing gymnastics product*



The measurements allowed us to determine which area that was.

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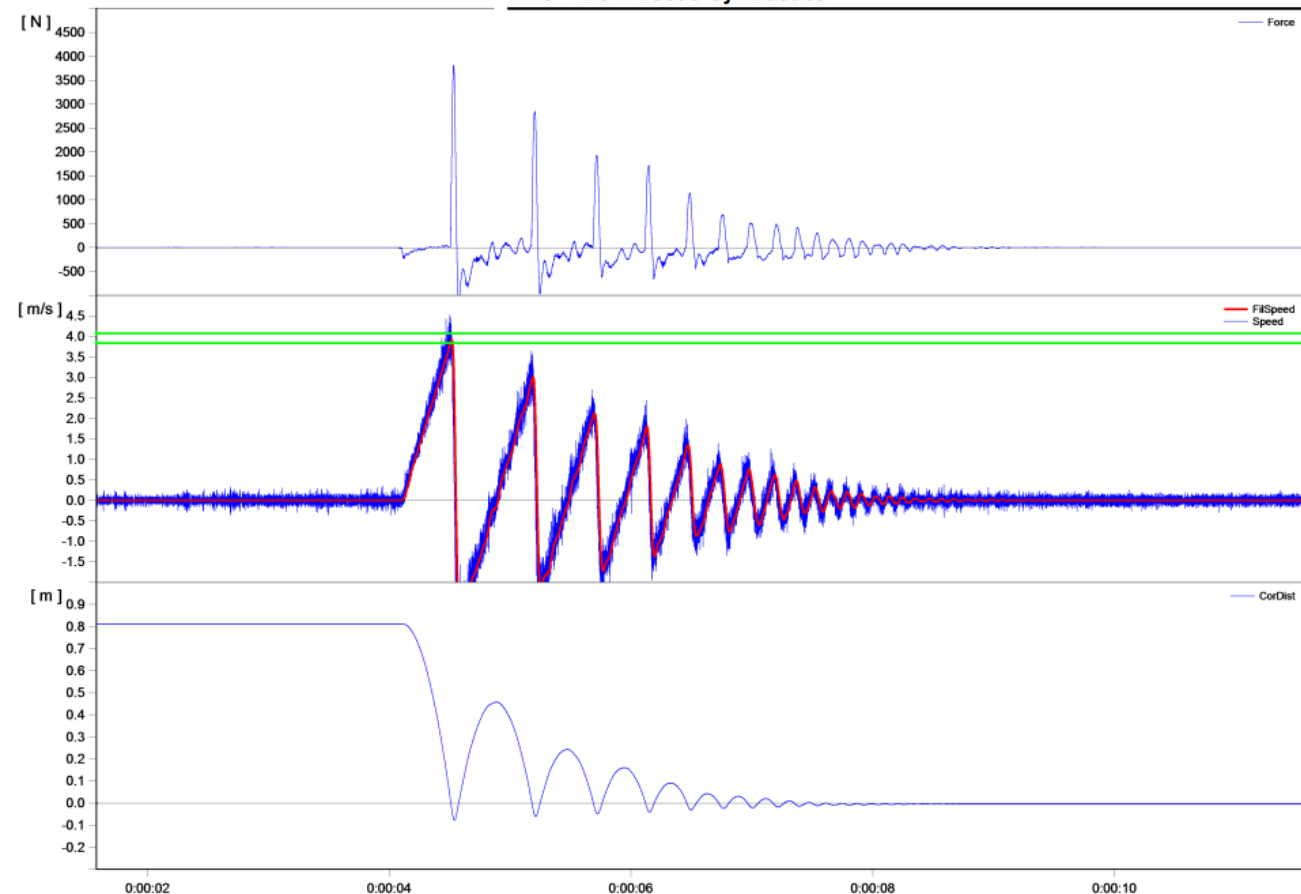


Impact Test

FIG International Gymnastics Federation
Standard Specification for 20 cm Landing Mats
MAG – Men Artistic Gymnastics



IV
MAG 11
01.08.1996
2



Distance 1.923 m

Corrected Distance -0.005 m

Velocity (max) 3.920 m/s

Deflection (max) -0.077 m

Rebound (max) 0.458 m

Acceleration (max) 190.969 m/s²

Force (max) 3819 N



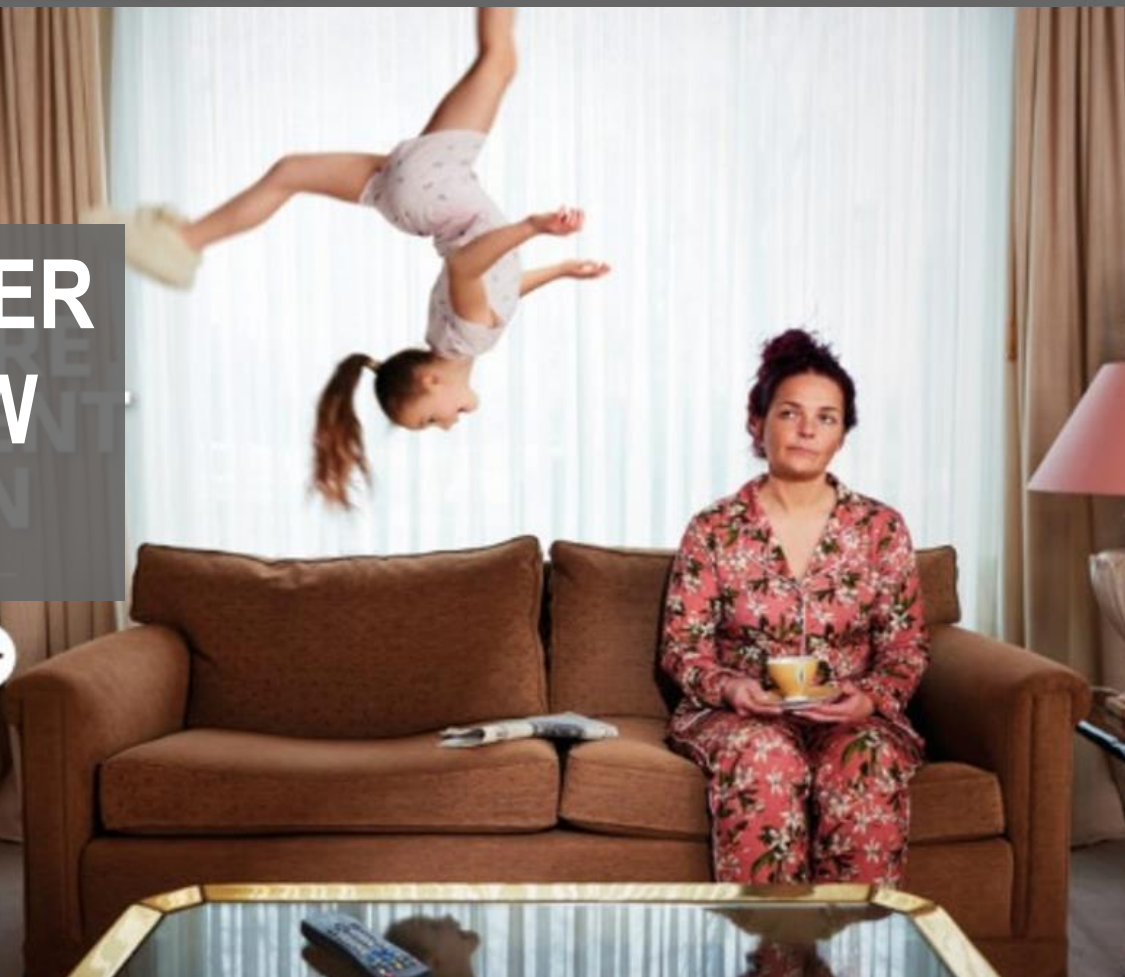
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EX #6 *Talent identification*

THERE IS A BETTER
PLACE TO SHOW
YOUR TALENT



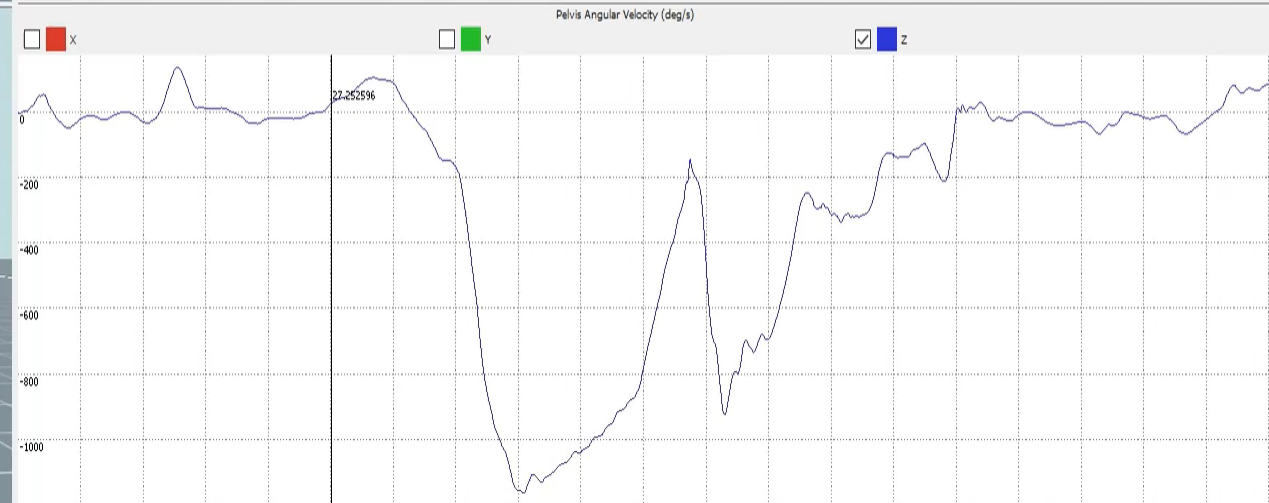
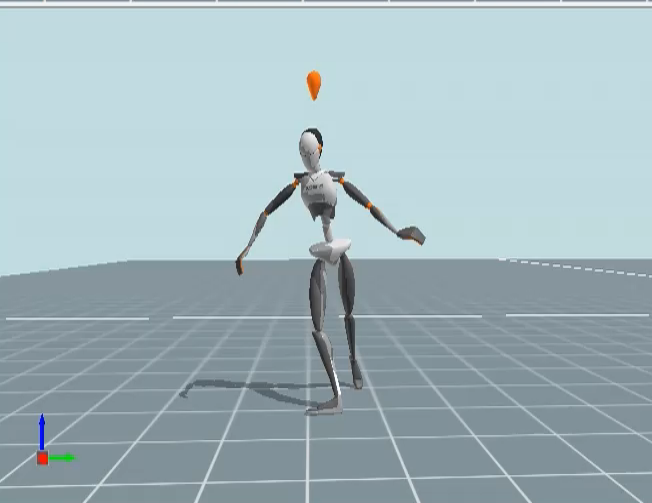
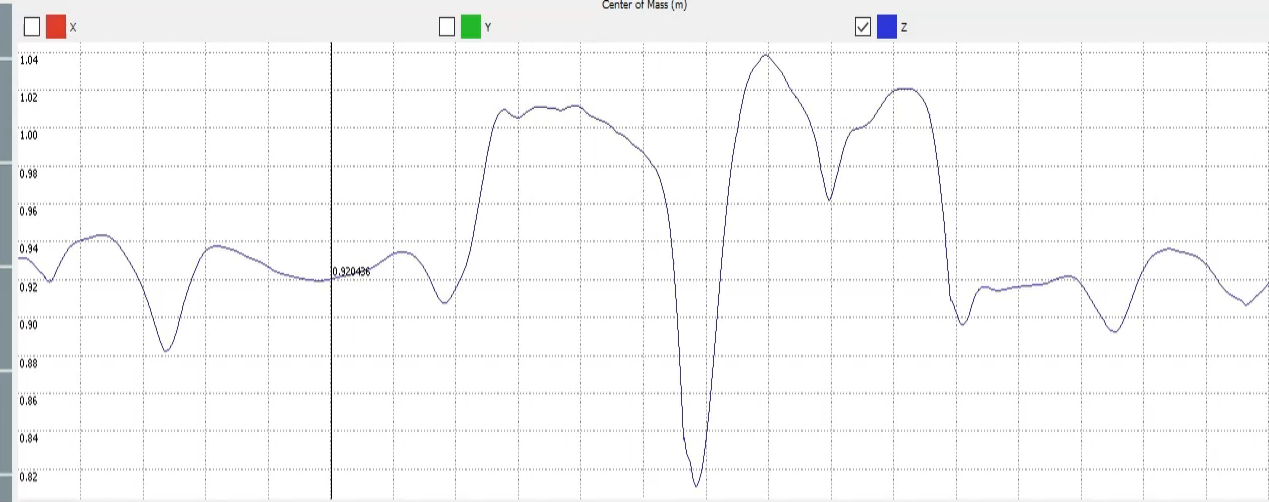
EX #7 Performance enhancement by 3D Motrion tracking



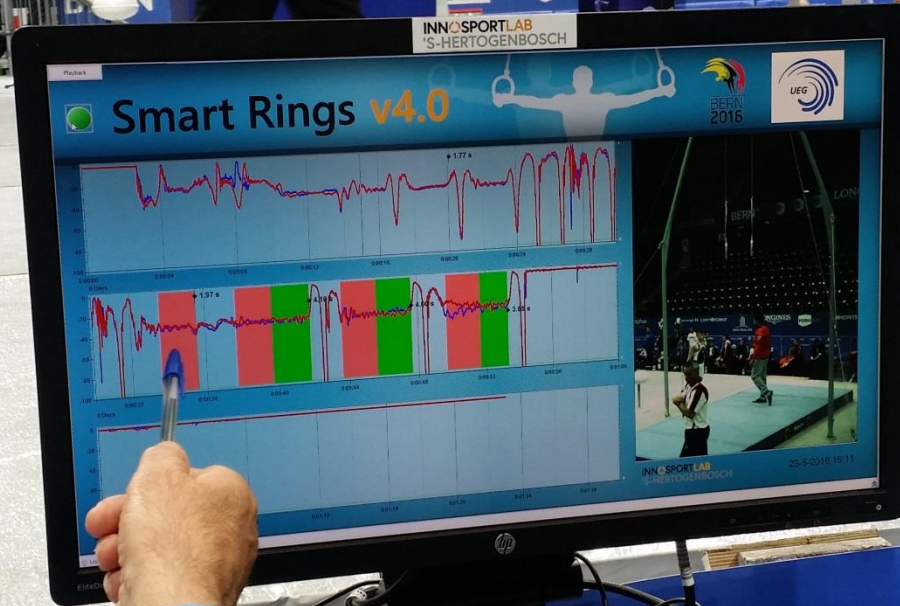
TISHA VOLLEMAN

Elite gymnast





EX #8 Smart Rings Jurytool



A JURY SUPPORT SYSTEM FOR EVALUATION
OF **HOLD TIME** BASED ON **FORCE MEASUREMENTS**
AND **EXPERT JURY INPUT.**



“HAWK-EYE” / VAR FOR GYMNASTICS



UNION EUROPÉENNE
DE GYMNASTIQUE



Fédération Internationale
de Gymnastique





TRANSLATION FROM COACH QUESTIONS TO SOLUTIONS..

**NATIONALE
SPORTINNOVATOR
PRIJS 2016**

NSP 2016: 'Smart Rings toolbox'

NSP 2018: 'Motivation toolbox for elite gymnasts'

www.isldb.nl

Thank you for your attention !

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