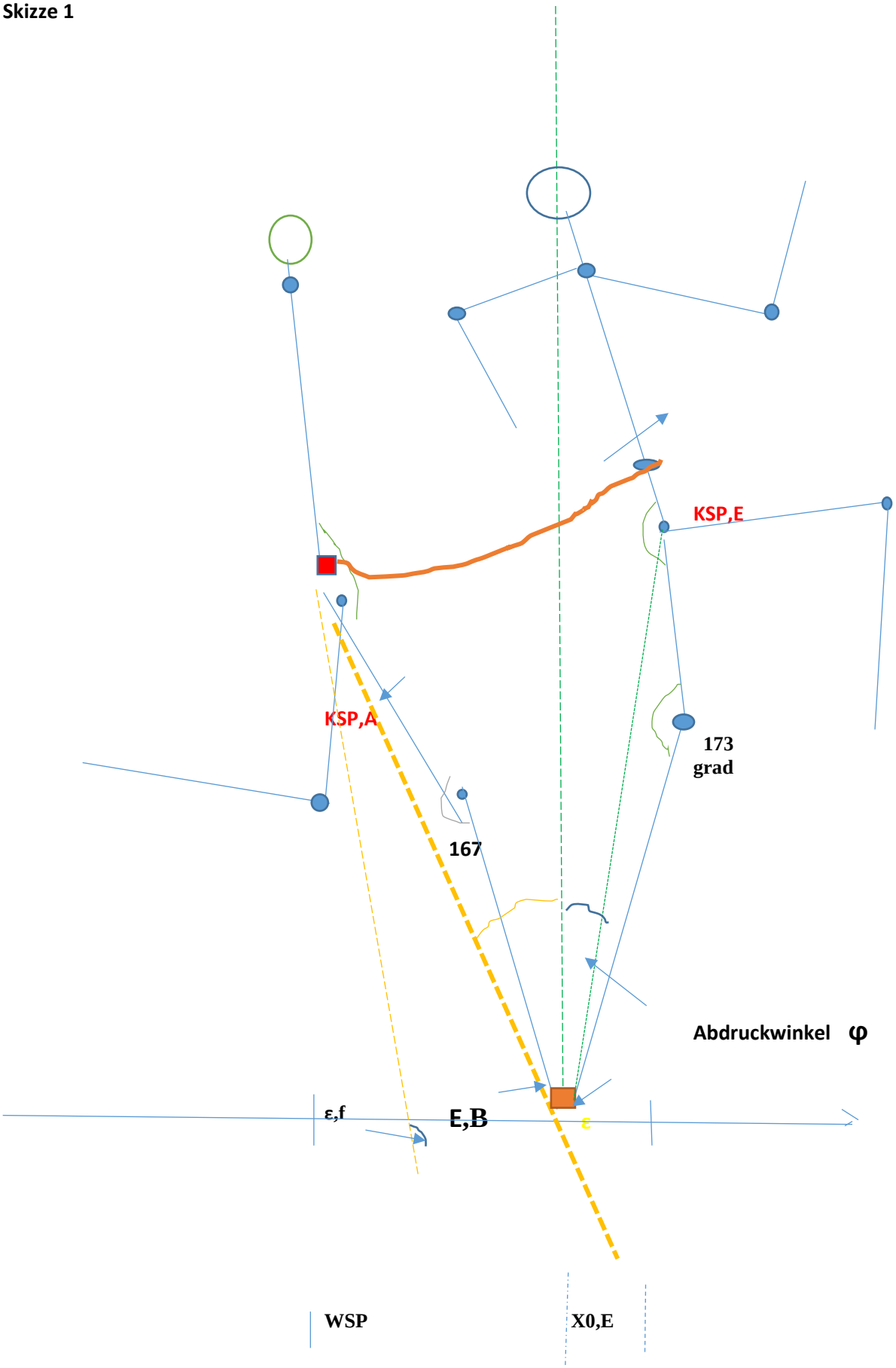
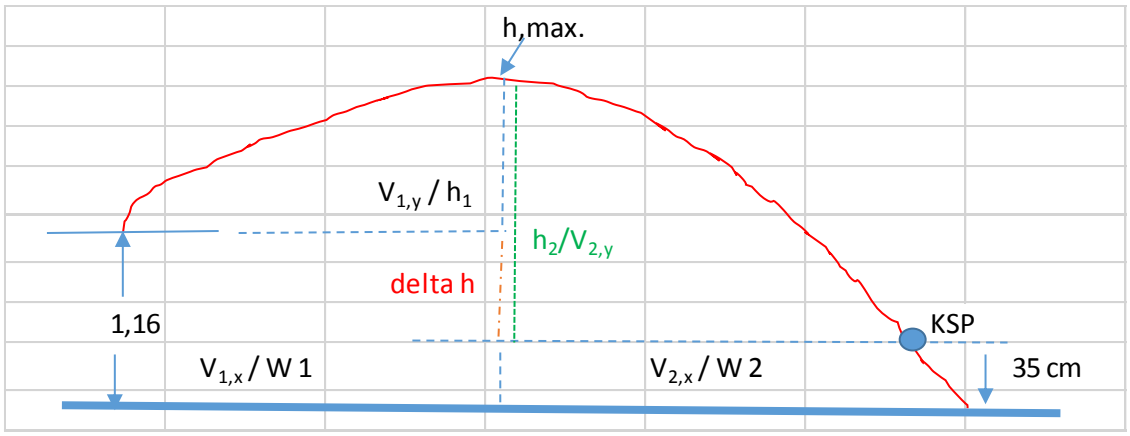
Skizzen zum Weitsprung in Einzelteilen

Skizze 1

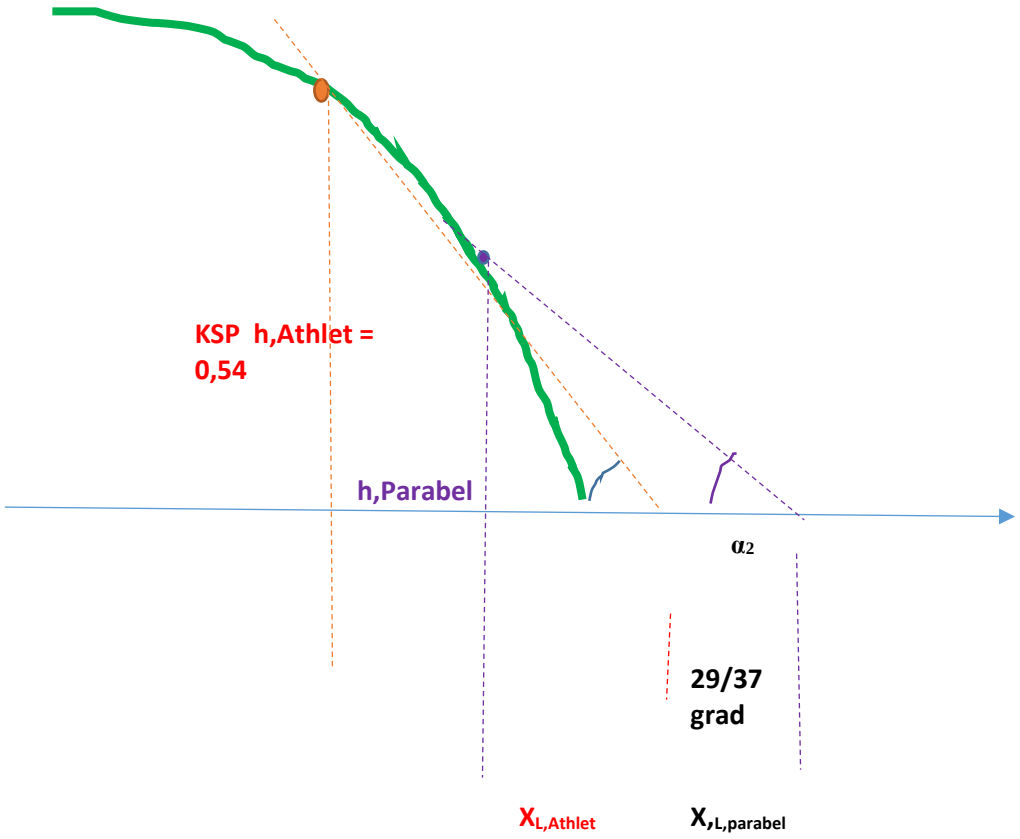


Skizze 2 :

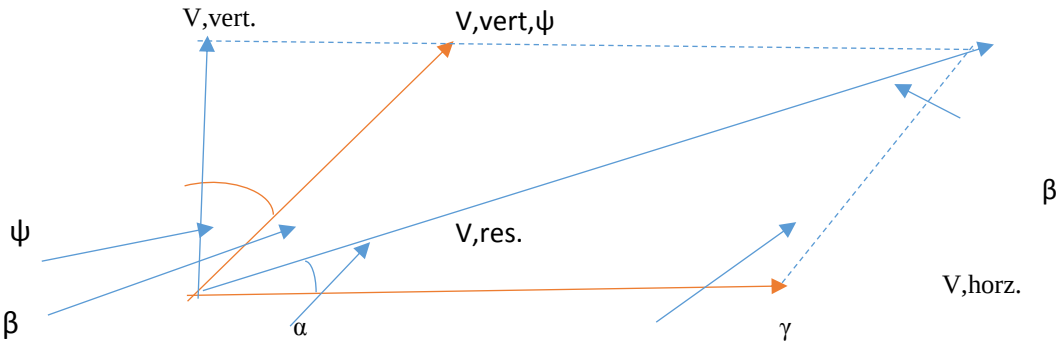


Skizze 4 :

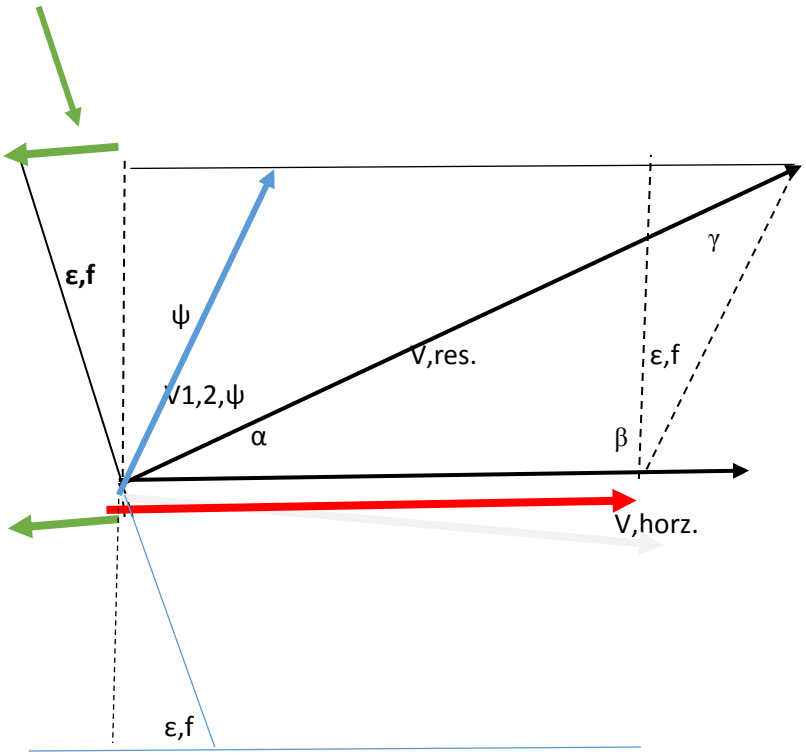
Delta L = Landungsdifferenz bei jump
= X,L,Parabel minus X,L,Athlet



Skizze 5

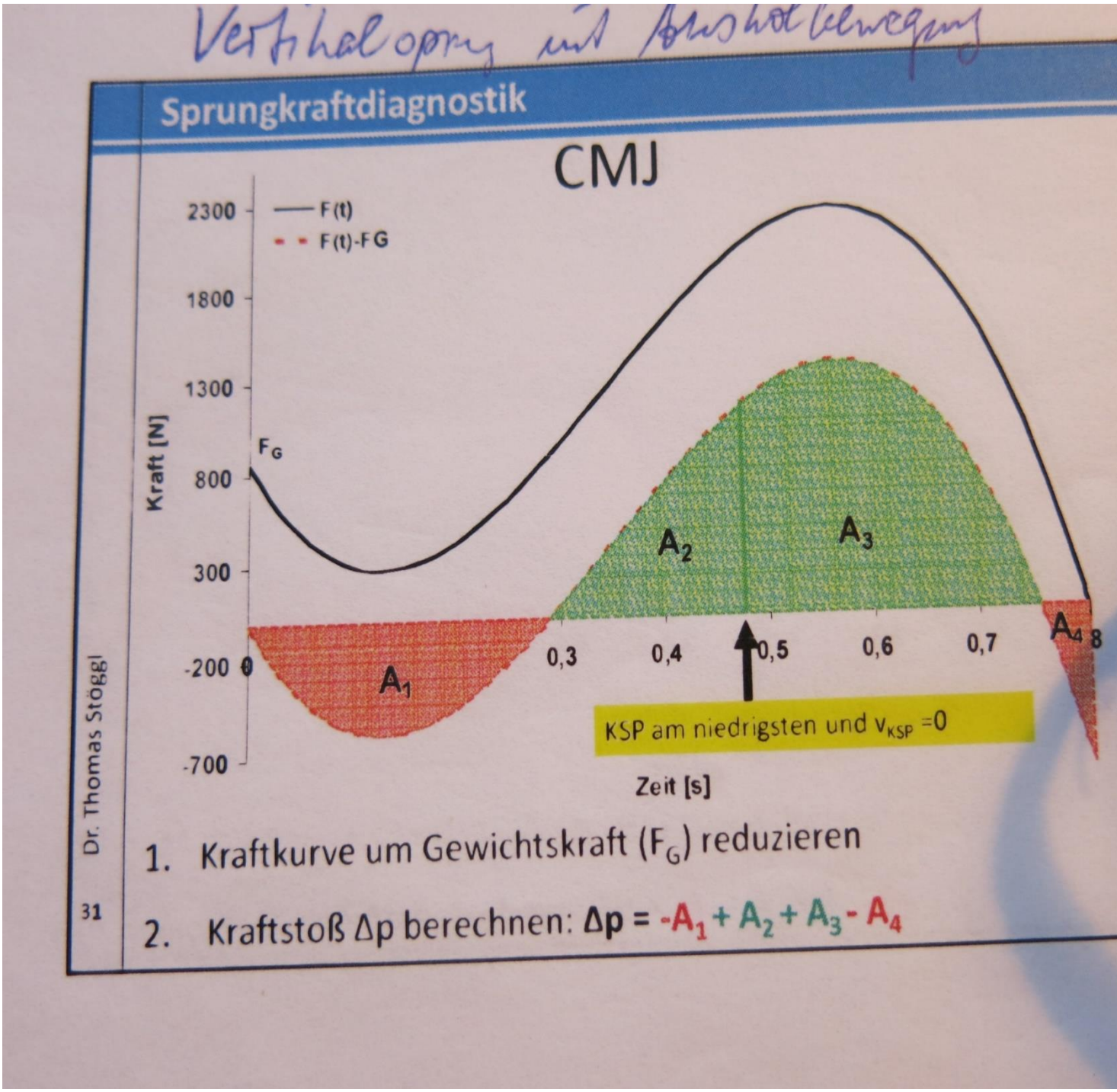


Skizze 6 :
Bremsstoß

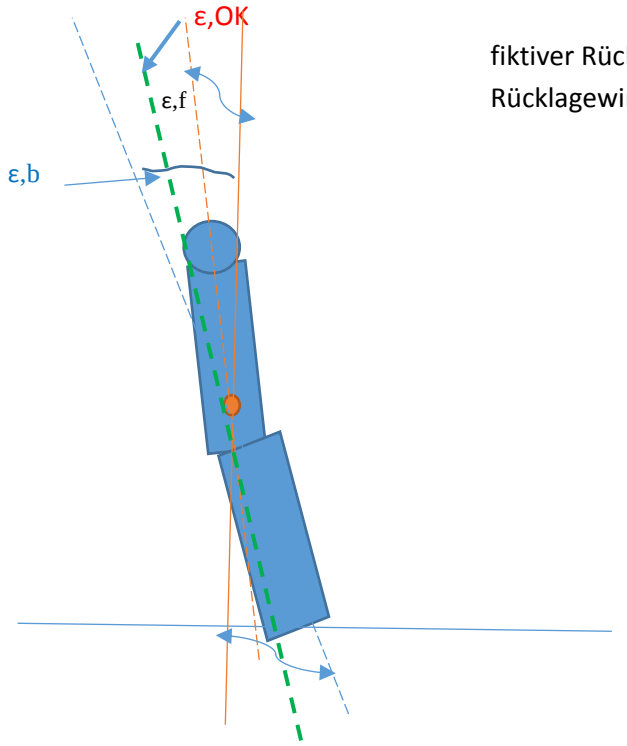


Fußaufsatz

Skizze 7 . nach Prof.Stöggl

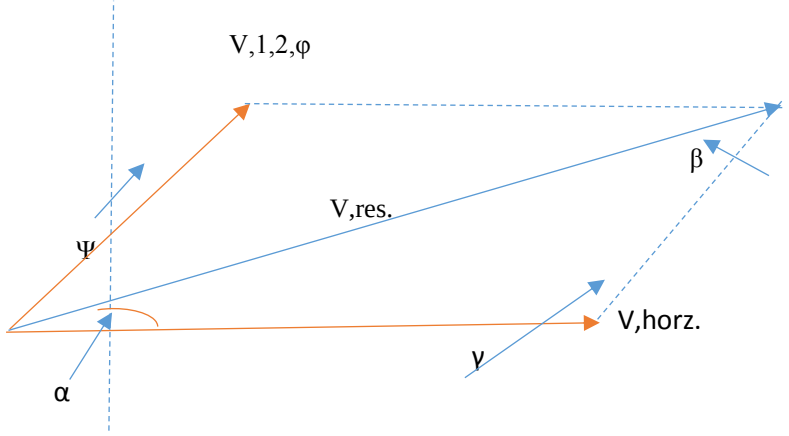


Skizze 9 : fiktiver Rücklagewinkel bei Absprung :



fiktiver Rücklagewinkel ε,f
Rücklagewinkel Oberkörper ε;OK

Skizze 10 : Addition der Kräfte



V,horz. = verbleibende horizontale Geschwindigkeit
V1,2,ψ = Geschwindigkeit nur aus Sprungkraft in Richtung Abdruckwinkel
V,res. = Geschwindigkeit in Richtung Abflug des Athleten unter dem Winkel α

α =	Abflugwinkel
ψ =	Abdruckwinkel , berechnet
γ =	180-β-α= 90+ψ
β =	90-ψ-α

Abb. 11

Messplatzaufbau einer Videoanalyse, Beispiel

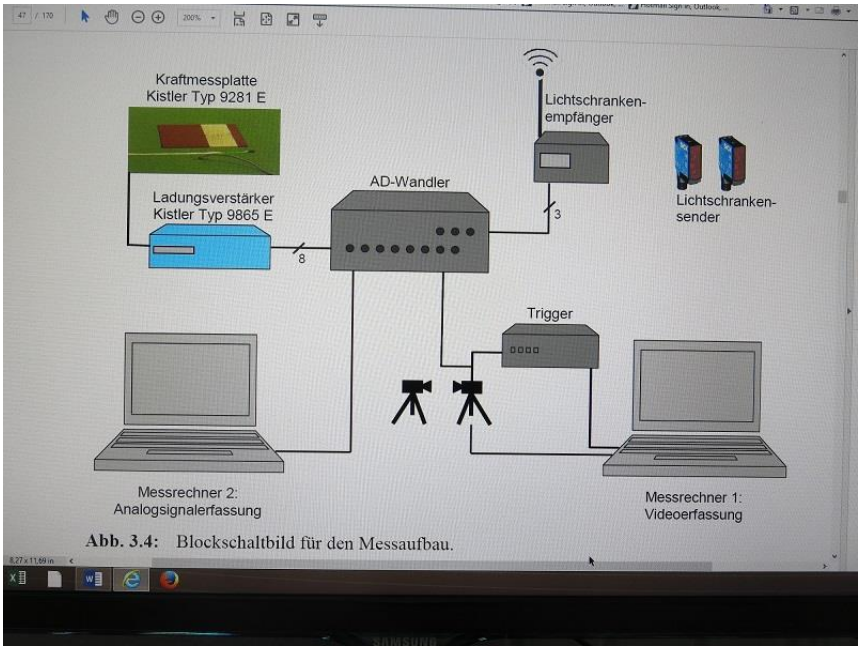
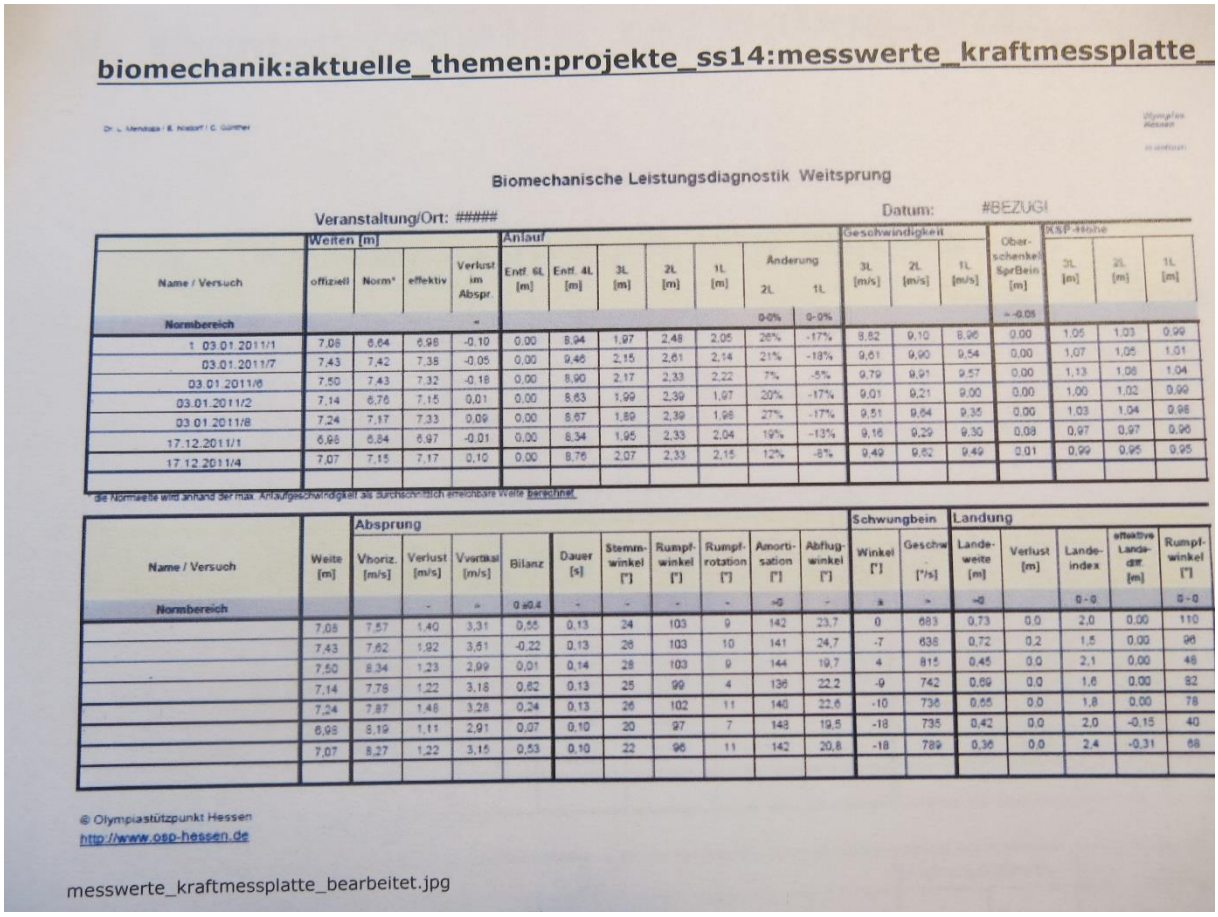


Abb. 1



biomechanik:aktuelle_themen:projekte_ss14:messwerte_kraftmessplatte_

Dr. L. Mendoza / E. Nixdorf / C. Günther

Biomechanische Leistungsdiagnostik Weitsprung

Veranstaltung/Ort: #####

Datum: #BEZUG!

Name / Versuch	Weiten [m] offiziell	Norm*	effektiv	Verlust im Abspr.	Anlauf Entf. 6L [m]	Entf. 4L [m]	3L [m]	2L [m]	1L [m]	Änderung 2L	Änderung 1L	Geschwindigkeit 3L [m/s]	2L [m/s]	1L [m/s]	Oberschenkel SprBein [m]	KSP-Höhe 3L [m]	2L [m]	1L [m]
Normbereich				=						0-0%	0-0%				> -0,05			
1 03.01.2011/1	7,08	6,64	6,98	-0,10	0,00	8,94	1,97	2,48	2,05	26%	-17%	9,82	9,10	8,96	0,00	1,05	1,03	0,99
03.01.2011/7	7,43	7,42	7,38	-0,05	0,00	9,46	2,15	2,61	2,14	21%	-18%	9,61	9,90	9,54	0,00	1,07	1,05	1,01
03.01.2011/6	7,50	7,43	7,32	-0,18	0,00	8,90	2,17	2,33	2,22	7%	-5%	9,79	9,91	9,57	0,00	1,13	1,08	1,04
03.01.2011/2	7,14	6,76	7,15	0,01	0,00	8,63	1,99	2,39	1,97	20%	-17%	9,01	9,21	9,00	0,00	1,00	1,02	0,99
03.01.2011/8	7,24	7,17	7,33	0,09	0,00	8,67	1,89	2,39	1,96	27%	-17%	9,51	9,64	9,35	0,00	1,03	1,04	0,98
17.12.2011/1	6,98	6,84	6,97	-0,01	0,00	8,34	1,95	2,33	2,04	19%	-13%	9,16	9,29	9,30	0,08	0,97	0,97	0,96
17.12.2011/4	7,07	7,15	7,17	0,10	0,00	8,76	2,07	2,33	2,15	12%	-8%	9,49	9,62	9,49	0,01	0,99	0,95	0,95

die Normweite wird anhand der max. Anlaufgeschwindigkeit als durchschnittlich erreichbare Weite berechnet

Name / Versuch	Weite [m]	Absprung Vhoriz. [m/s]	Verlust [m/s]	Vvertikal [m/s]	Bilanz	Dauer [s]	Stemmwinkel [°]	Rumpfwinkel [°]	Rumpfrotation [°]	Amortisation [°]	Abflugwinkel [°]	Schwungbein Winkel [°]	Geschw. [°/s]	Landung Landeweite [m]	Verlust [m]	Landeindex	effektive Landedist. [m]	Rumpfwinkel [°]
Normbereich			-	>	0 ±0,4	-	-	-	-	=0	-	±	>	=0		0 - 0		0 - 0
	7,08	7,57	1,40	3,31	0,55	0,13	24	103	9	142	23,7	0	683	0,73	0,0	2,0	0,00	110
	7,43	7,62	1,92	3,51	-0,22	0,13	26	103	10	141	24,7	-7	638	0,72	0,2	1,5	0,00	96
	7,50	8,34	1,23	2,99	0,01	0,14	28	103	9	144	19,7	4	815	0,45	0,0	2,1	0,00	48
	7,14	7,78	1,22	3,18	0,62	0,13	25	99	4	136	22,2	-9	742	0,69	0,0	1,6	0,00	82
	7,24	7,87	1,48	3,28	0,24	0,13	26	102	11	140	22,6	-10	736	0,55	0,0	1,8	0,00	78
	6,98	8,19	1,11	2,91	0,07	0,10	20	97	7	148	19,5	-18	735	0,42	0,0	2,0	-0,15	40
	7,07	8,27	1,22	3,15	0,53	0,10	22	96	11	142	20,8	-18	789	0,36	0,0	2,4	-0,31	68

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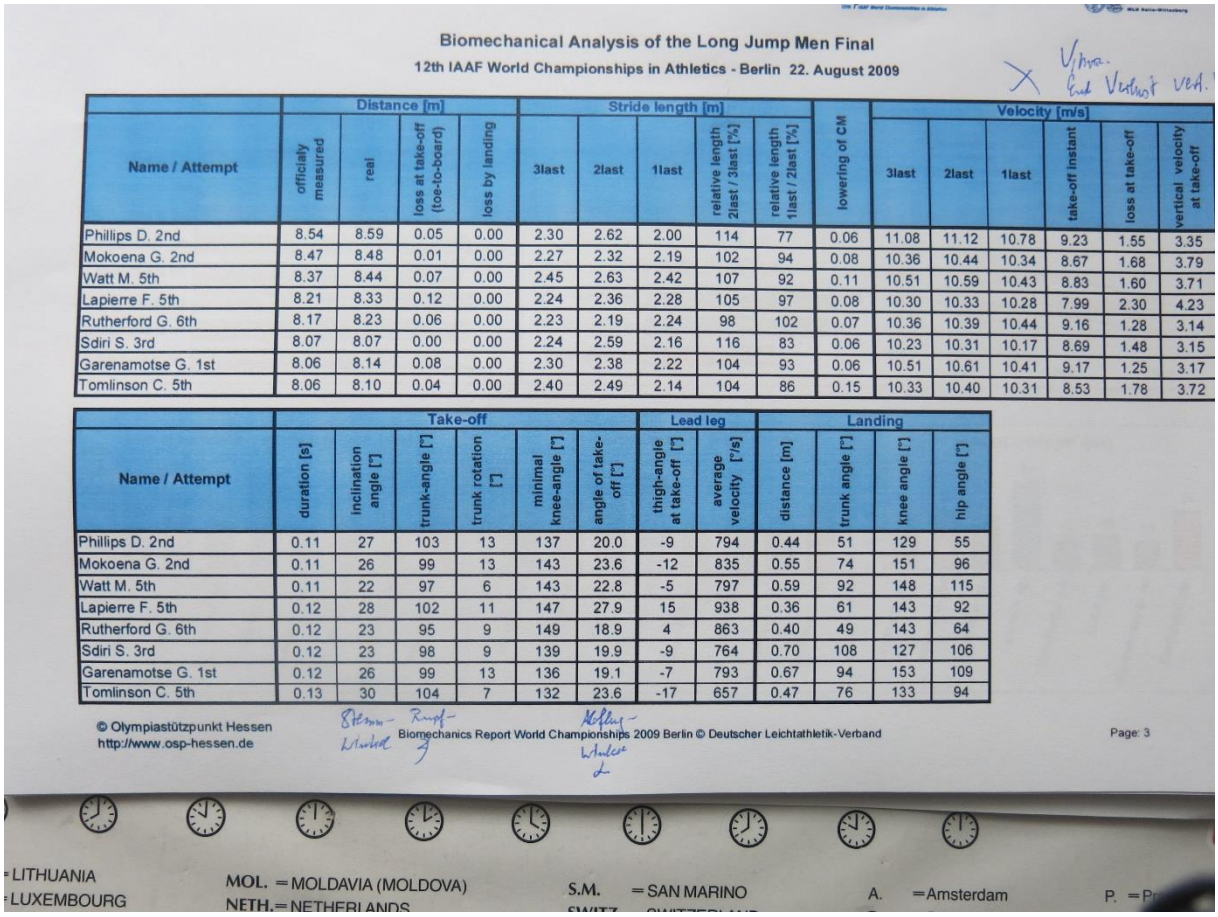
messwerte_kraftmessplatte_bearbeitet.jpg

Abb. 2



Biomechanical Analysis of the Long Jump Men Final

12th IAAF World Championships in Athletics - Berlin 22. August 2009

Name / Attempt	Distance [m]				Stride length [m]					lowering of CM	Velocity [m/s]					
	officialy measured	real	loss at take-off (toe-to-board)	loss by landing	3last	2last	1last	relative length 2last / 3last [%]	relative length 1last / 2last [%]		3last	2last	1last	take-off instant	loss at take-off	vertical velocity at take-off
Phillips D. 2nd	8.54	8.59	0.05	0.00	2.30	2.62	2.00	114	77	0.06	11.08	11.12	10.78	9.23	1.55	3.35
Mokoena G. 2nd	8.47	8.48	0.01	0.00	2.27	2.32	2.19	102	94	0.08	10.36	10.44	10.34	8.67	1.68	3.79
Watt M. 5th	8.37	8.44	0.07	0.00	2.45	2.63	2.42	107	92	0.11	10.51	10.59	10.43	8.83	1.60	3.71
Lapierre F. 5th	8.21	8.33	0.12	0.00	2.24	2.36	2.28	105	97	0.08	10.30	10.33	10.28	7.99	2.30	4.23
Rutherford G. 6th	8.17	8.23	0.06	0.00	2.23	2.19	2.24	98	102	0.07	10.36	10.39	10.44	9.16	1.28	3.14
Sdiri S. 3rd	8.07	8.07	0.00	0.00	2.24	2.59	2.16	116	83	0.06	10.23	10.31	10.17	8.69	1.48	3.15
Garenamotse G. 1st	8.06	8.14	0.08	0.00	2.30	2.38	2.22	104	93	0.06	10.51	10.61	10.41	9.17	1.25	3.17
Tomlinson C. 5th	8.06	8.10	0.04	0.00	2.40	2.49	2.14	104	86	0.15	10.33	10.40	10.31	8.53	1.78	3.72

Name / Attempt	Take-off						Lead leg		Landing			
	duration [s]	inclination angle [°]	trunk-angle [°]	trunk rotation [°]	minimal knee-angle [°]	angle of take-off [°]	thigh-angle at take-off [°]	average velocity [°/s]	distance [m]	trunk angle [°]	knee angle [°]	hip angle [°]
Phillips D. 2nd	0.11	27	103	13	137	20.0	-9	794	0.44	51	129	55
Mokoena G. 2nd	0.11	26	99	13	143	23.6	-12	835	0.55	74	151	96
Watt M. 5th	0.11	22	97	6	143	22.8	-5	797	0.59	92	148	115
Lapierre F. 5th	0.12	28	102	11	147	27.9	15	938	0.36	61	143	92
Rutherford G. 6th	0.12	23	95	9	149	18.9	4	863	0.40	49	143	64
Sdiri S. 3rd	0.12	23	98	9	139	19.9	-9	764	0.70	108	127	106
Garenamotse G. 1st	0.12	26	99	13	136	19.1	-7	793	0.67	94	153	109
Tomlinson C. 5th	0.13	30	104	7	132	23.6	-17	657	0.47	76	133	94

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NETH. = NETHERLANDS
S.M. = SAN MARINO
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P. = P