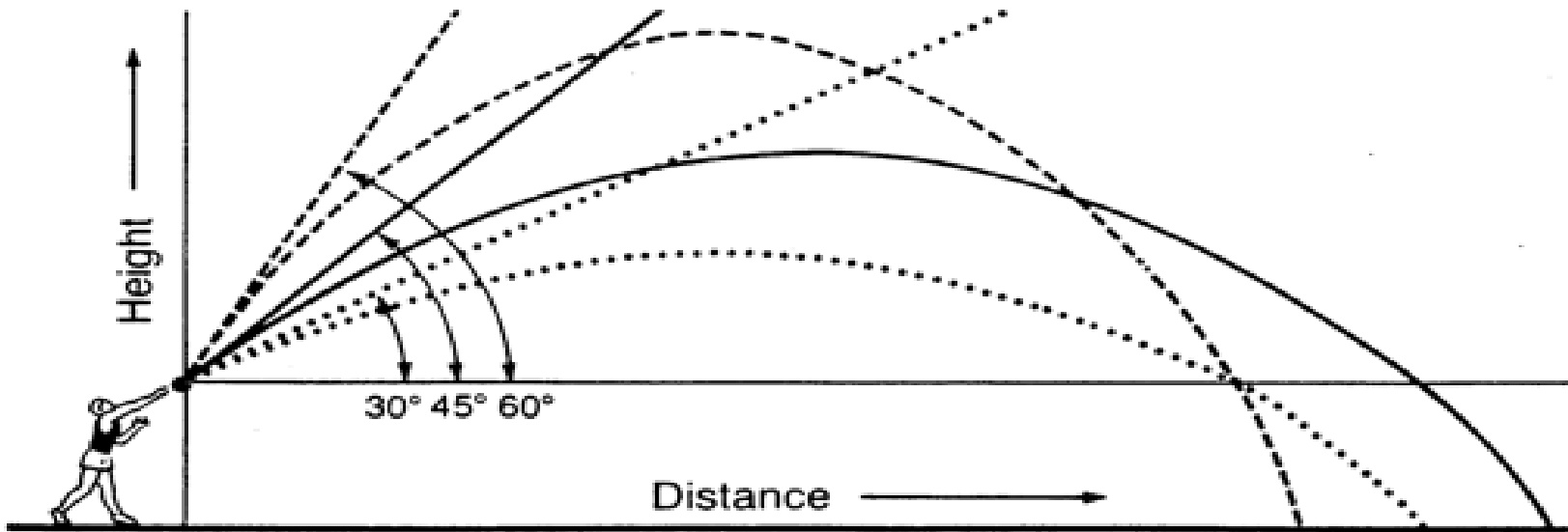




Shot Put

Optimum Angle of Release



Taken From: Jack Sweeney

Angle of Release: Shot Put

Cantwell	21.54m 37.7 deg	20.72m 37.5 deg	21.03m 40.4 deg	21.21m 37.1 deg	22.03m 37.8 deg	x x	21.31m 38.1 deg
Majewski	21.36m 34.2 deg	21.19m 38.8 deg	20.80m 39.4 deg	21.68m 39.2 deg	21.91m 39.3 deg	21.18m 34.6 deg	21.35m 37.6 deg
Bartels	20.35m 37.7 deg	20.18m 37.8 deg	21.37m 33.6 deg	20.80m 34.9 deg	20.94m 38.4 deg	21.20m 36.4 deg	20.81m 36.5 deg
Hoffa	21.02m 36.3 deg	x x	20.95m 33.5 deg	21.14m 35.0 deg	20.97m 33.4 deg	21.28m 34.4 deg	21.07m 34.5 deg
Nelson	21.11m 32.9 deg	20.93m 35.6 deg	x x	x x	x x	x x	21.02m 34.25 deg
Lyshyn	x x	20.98m 39.2 deg	x x	x x	x x	x x	20.98m 39.2 deg
Mikhnevich	20.34m 39.7 deg	20.31m 37.9 deg	20.62m 39.8	20.74m 37.7 deg	20.54m 37.3 deg	x x	20.51m 38.48 deg
Vodovnik	19.60m 32.7 deg	19.50m 36.3	20.50m 33.1 deg	x x	19.82m 35.5 deg	20.14m 34.7 deg	19.91m 34.46 deg

From: Wilko Schaa, Biomechanical Analysis of the Shot Put at the 2009 IAAF World Championships in Athletics, in New Studies in Athletics, No. 3/4 (2010)

Relationship of Release Velocity and Throwing Distance

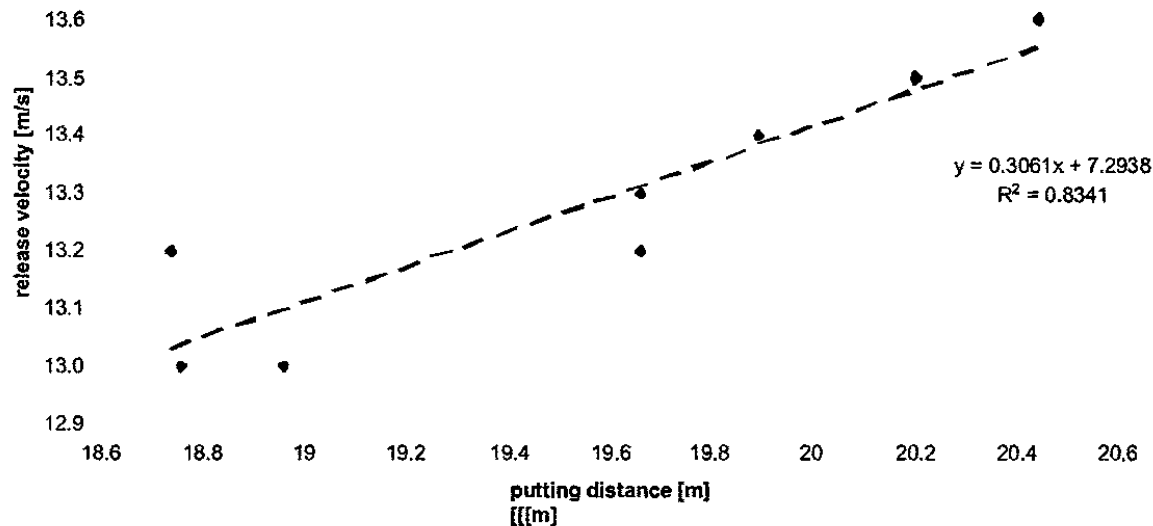


Figure 6: Correlation between release velocity and angle of release for the best throws of the top women shot putters at the 2009 IAAF World Championships in Athletics

From: Wilko Schaa, Biomechanical Analysis of the Shot Put at the 2009 IAAF World Championships in Athletics, in *New Studies in Athletics*, No. 3/4 (2010)

Width of Base while in Power Position: Men

Glide Technique

Majewski	21.91m	.91m	1.28m	42/58%
Bartels	21.37m	.87m	1.29m	40/60%
Mikhnevich	20.74m	.92m	1.17m	44/56%

Rotational Technique

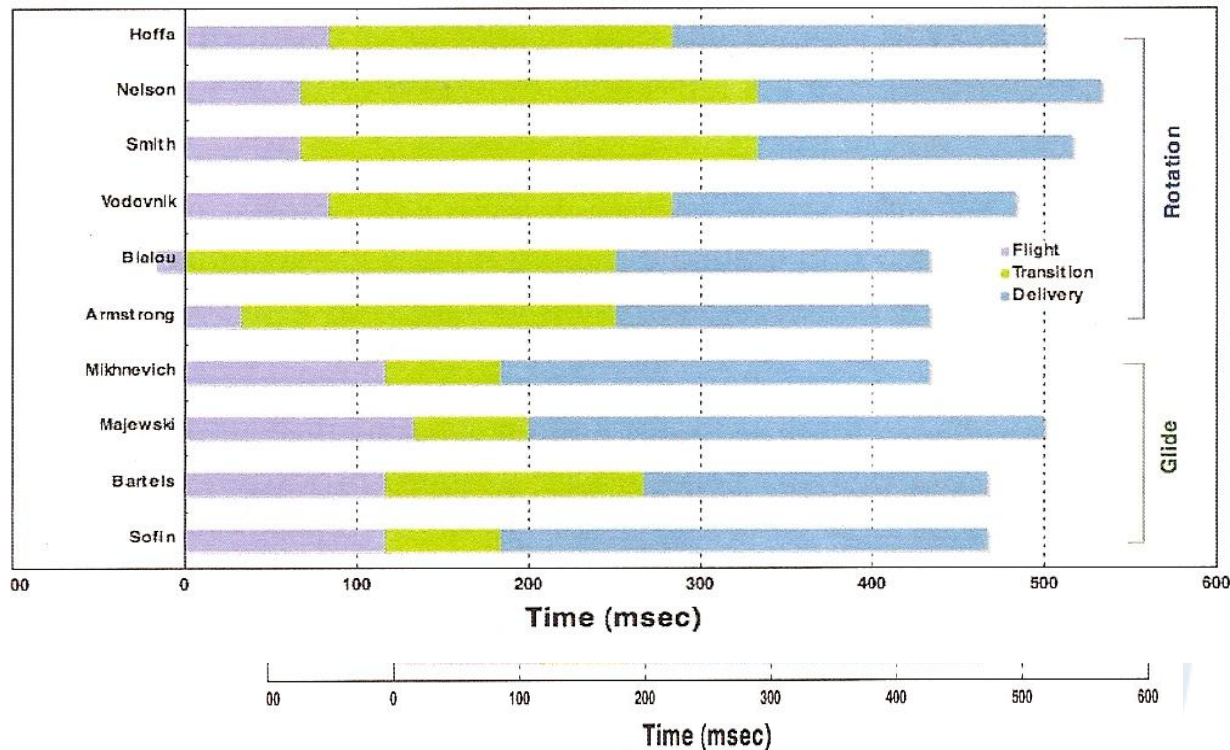
Cantwell	22.03m	1.14m	.71m	63/37%
Hoffa	21.28m	1.12m	.70m	62/38%
Nelson	21.11m	1.06m	.80m	57/43%
Lyshyn	20.98m	.83m	.86m	51/49%
Vodovnik	20.50m	.96m	1.00m	51/49%

Width of Base for Women

Vili	20.44m	.89m	1.19m	42.8/57.2%
Kleinert	20.20m	1.00m	1.03m	49.3/50.7%
Gong	19.89m	.85m	1.23m	40.9/59.1%
Mikhnevich	19.66m	.88m	1.08m	44.9/55.1%
Avdeeva	19.66m	.99m	.91m	52.1/47.9%
Carter	18.96m	.99m	1.14m	46.5/53.5%
Li	18.76m	.84m	1.25m	40.2/59.8%
Gonzalez	18.74m	1.02m	1.08m	48.6/51.4%

From: Wilko Schaa, New Studies in Athletics No. 3/4, 2010

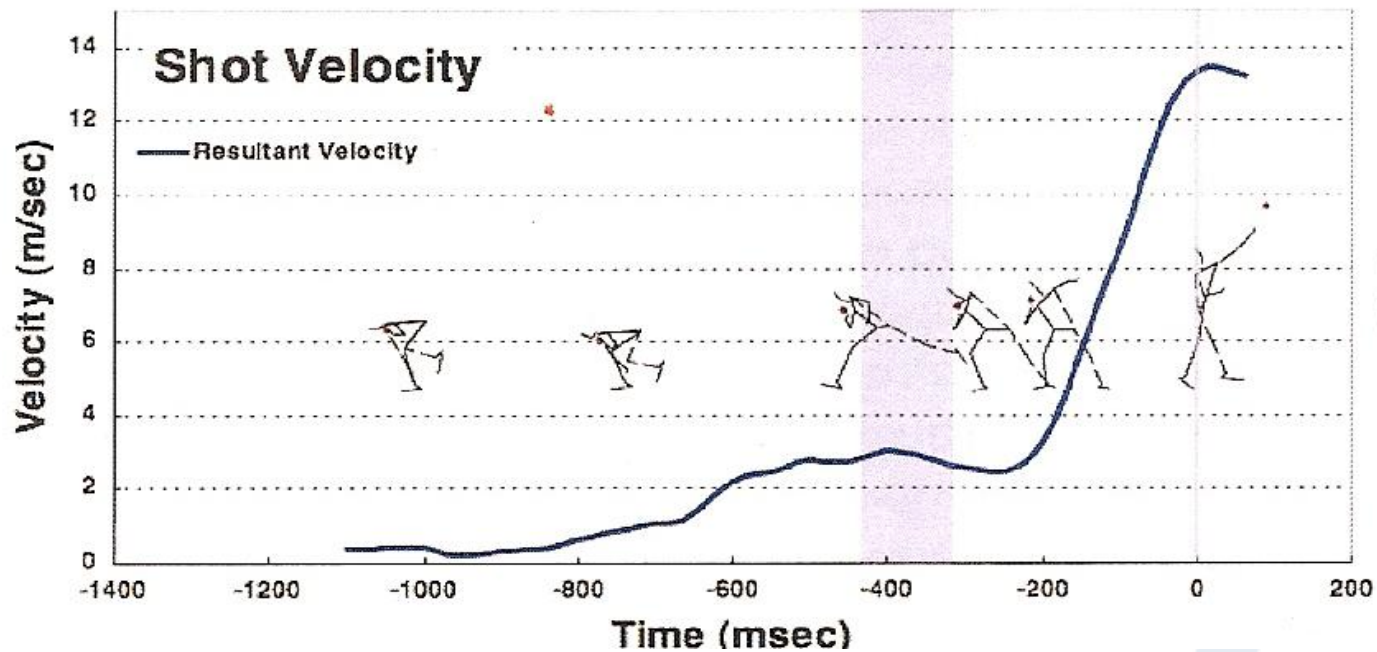
Length of Flight Phase, Transition Phase, and Delivery Phase



From: Byun et al, 2007, Biomechanical Analysis of the Shot Put at the 2007 IAAF World Championships in Athletics

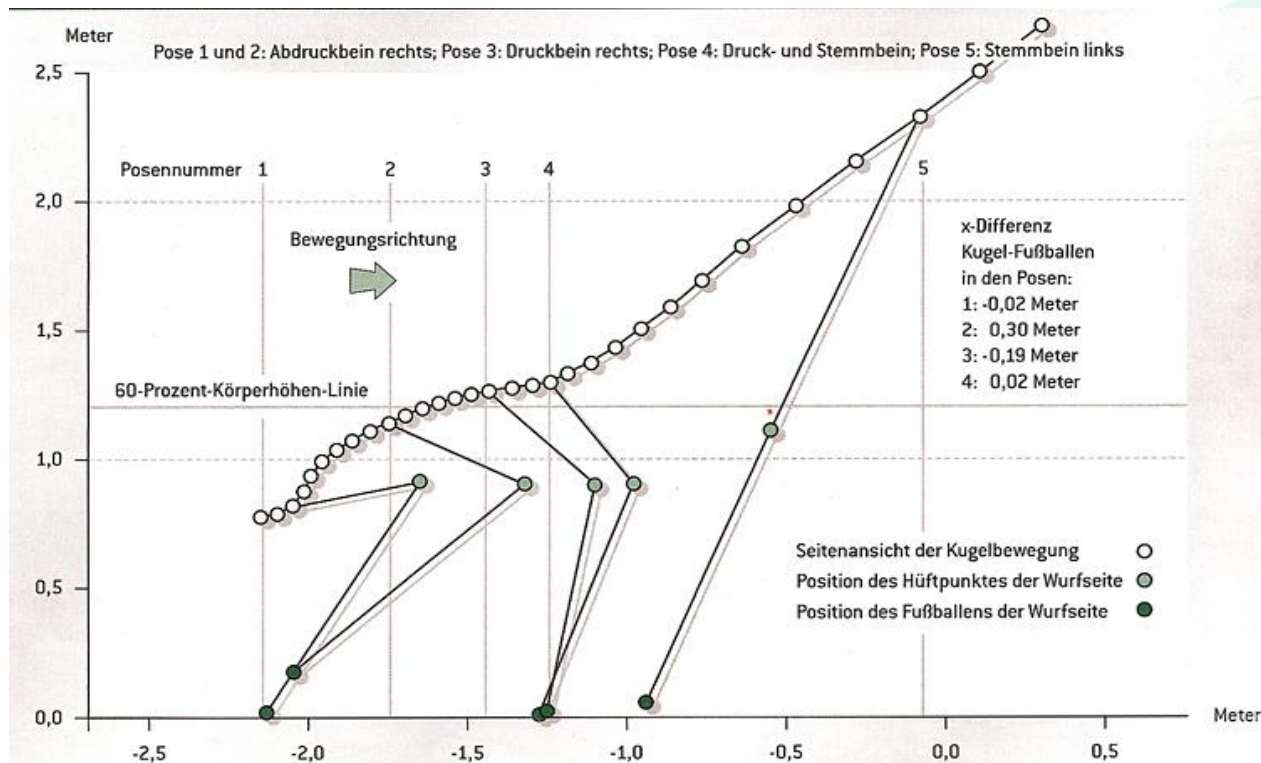
Acceleration Pattern of the Shot in the Glide Technique

Mikhnevich (21.27m)



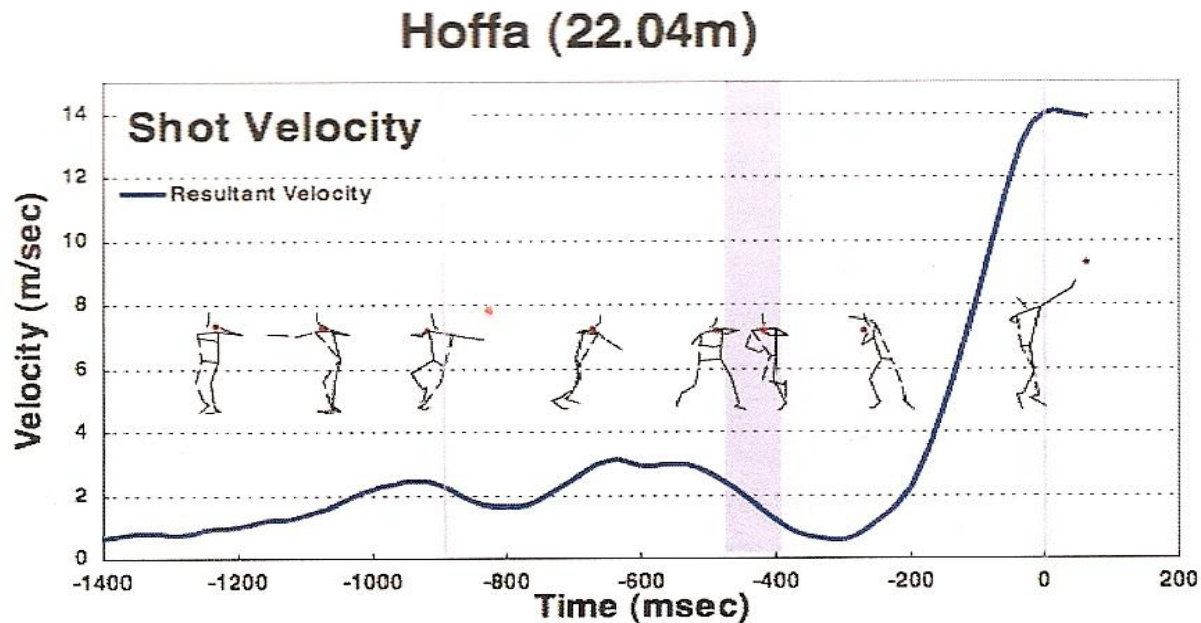
From: Byun et al, 2007, In: New Studies in Athletics

Shot Path in the Glide technique: David Storl



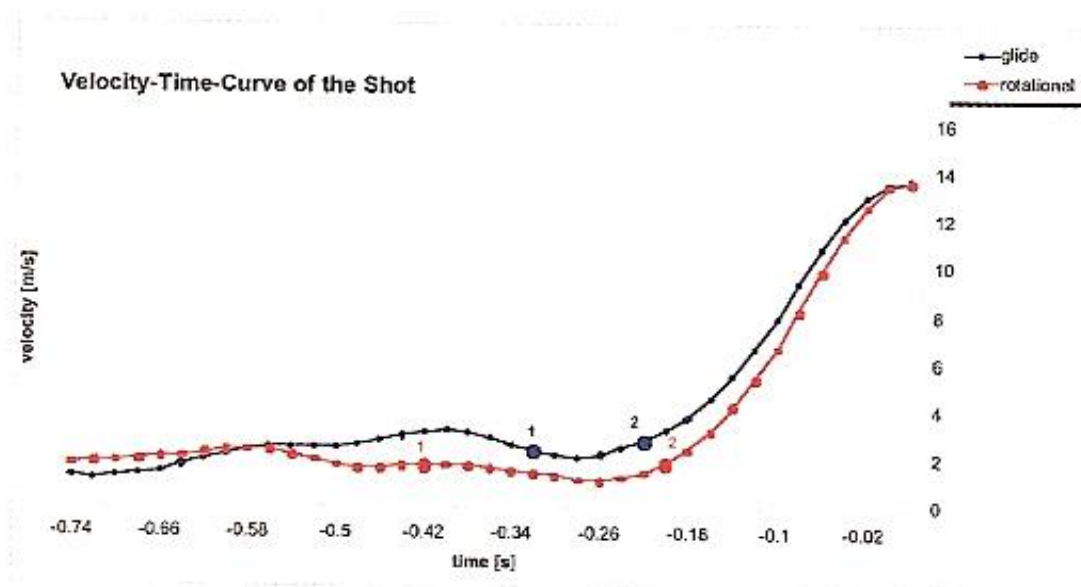
From: Leichtathletik Training, July 2009

Acceleration Pattern of the Shot in the Rotational Technique



From: Byun et al, 2007, in New Studies in Athletics

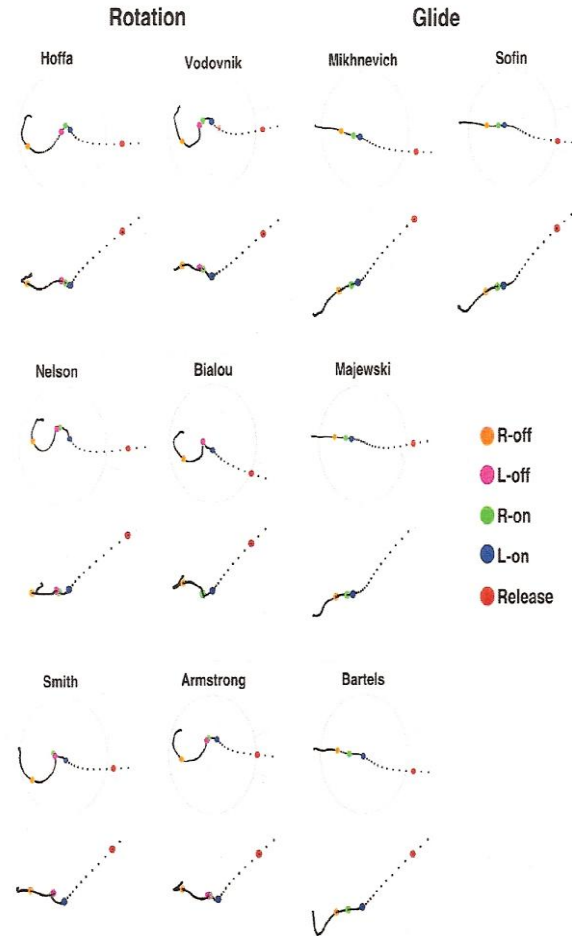
Acceleration Path of Shot for Both Glide and Rotational Technique



From: Wilko Schaa, Biomechanical Analysis of the Shot Put at the 2009 IAAF World Championships, New Studies in Athletics, No. 3/4 (2010)

Figure 1. Shot trajectory of elite putters (top row) and elite putters (bottom row) during the shot.

putters



From: Byun et al, 2007, Biomechanical Analysis of the Shot Put at the 2007 IAAF World Championships in Athletics