

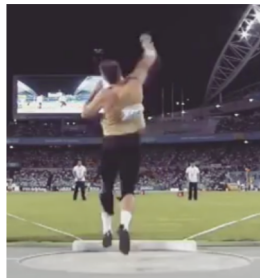
Glide Technique of David Storl

Wilko Schaa

European Shot Put Conference
10th November 2019

Technical development

Reverse



2011



2013

Non reverse

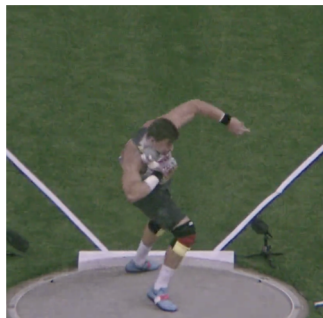


2015



2017

Reverse

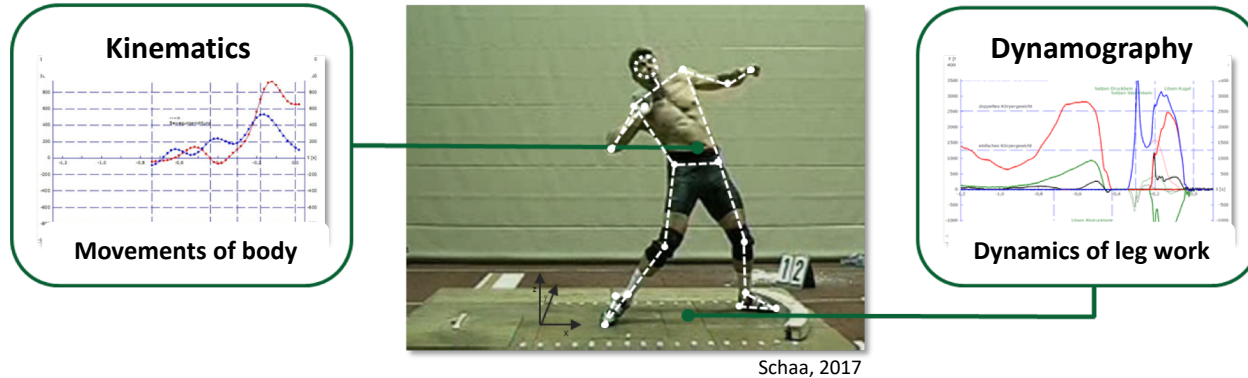


2018



2019

Motion analysis

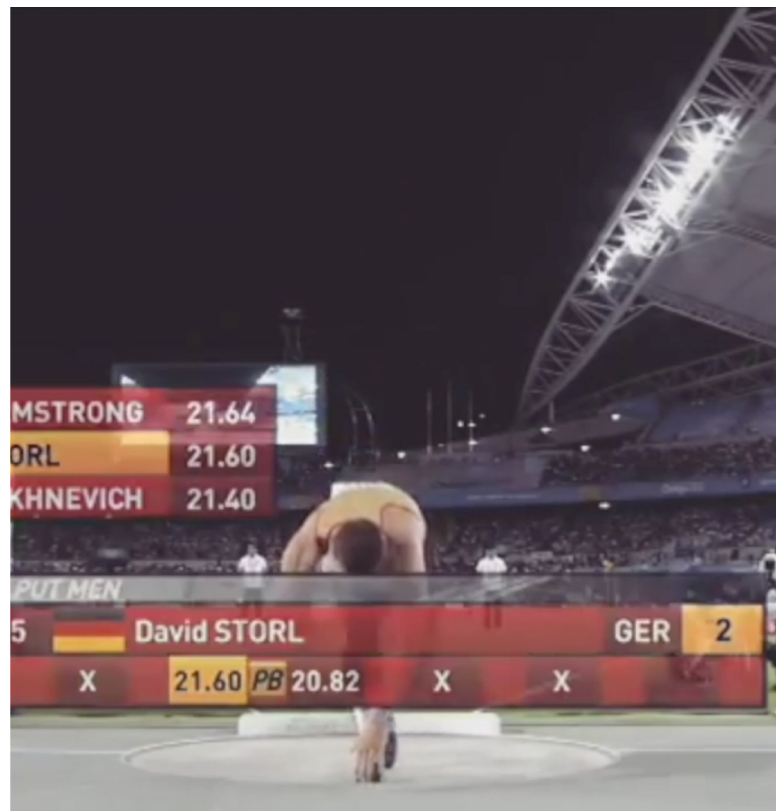


- Several times a year in Training & Competition
- Database
- Analysis of David since 2008

What made him strong?

- Fast glide (COM velocity $>2,4$ m/s)
- No or rarely velocity loss in transition
- High shot velocity at left leg touchdown (>3 m/s)
- Effective delivery from an individual power pos.
 - explosive leg work!

Back to his old strengths!



Push-off

Goal:

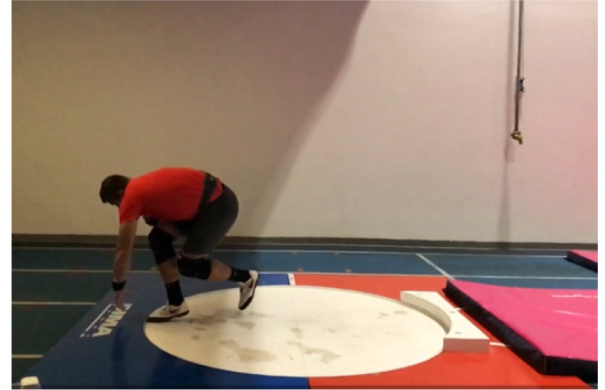
- Create high glide velocity (impulse)
- Attain functional posture

Impulse

1. Impulse of Right leg = $F \times t$
2. Impulse of left leg pull motion

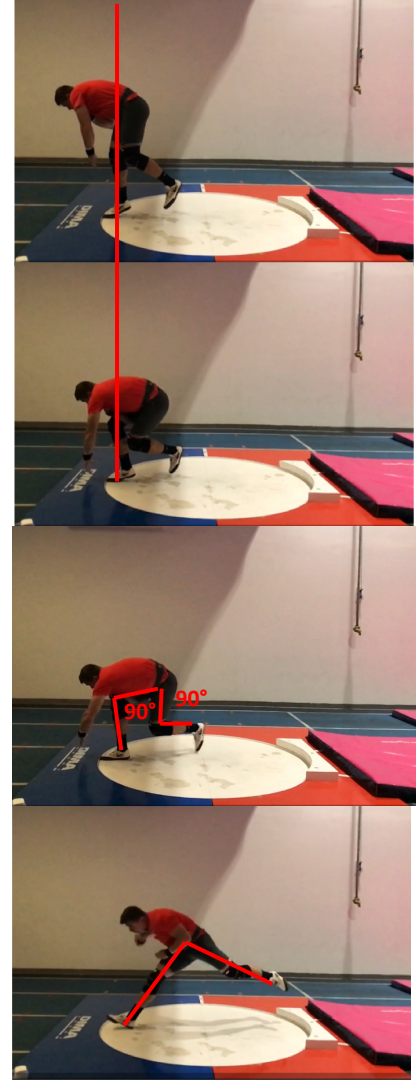
Technical focus:

- Long, powerfull push-off
- Well timed left leg pull / kick



Push-off

- Vertical lower from high point
 - No shift in throwing direction, COM stays over right foot
 - Knee comes to toe
- Right leg push-off starts in low point („leading leg“)
 - whole foot work: ball - sole - heel
 - powerfull and long, till full knee extension
- Left leg pull starts when right foot on sole
 - flat direction
 - „double extension“
- Upper body stays passive



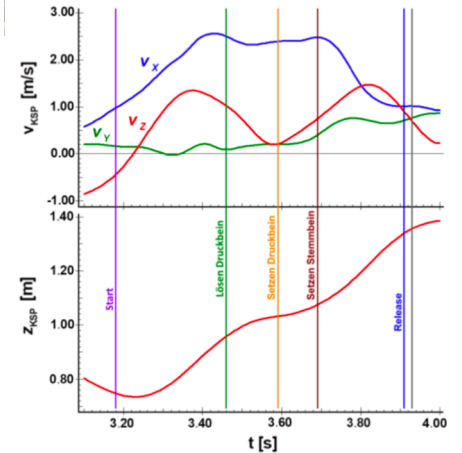
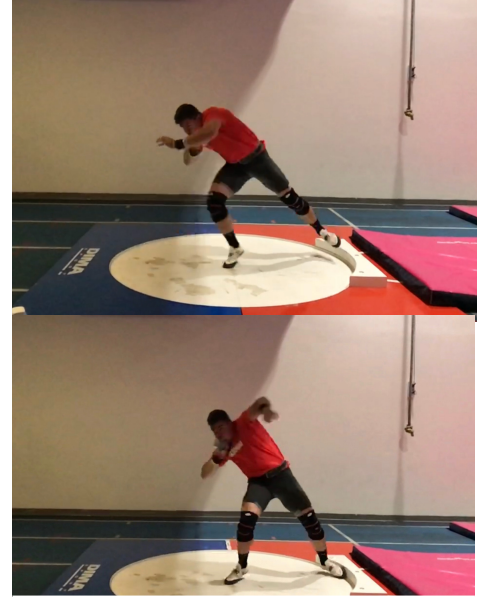
Transition

Goal:

- Maintenance or increase of glide velocity
- Attain functional power position

Technical focus:

- Long glide, right leg touchdown under the body
- Active touchdown of right leg
- Right leg stiff, no movement
- Touchdown left leg as a result of horizontal movement





Power Position?



Power Position

- relative upright position
- COM on right leg
- Shot over right foot
- Foot turned about 45°
- Feet placement
 - narrow distance (1,10 - 1,20 m)
 - feet placement in line
- Left arm opened up
- Slight to medium separation $30 - 50^\circ$



Delivery

Left leg:

- Decelerates the body as rapid as possible
- Supports the delivery in vertical direction

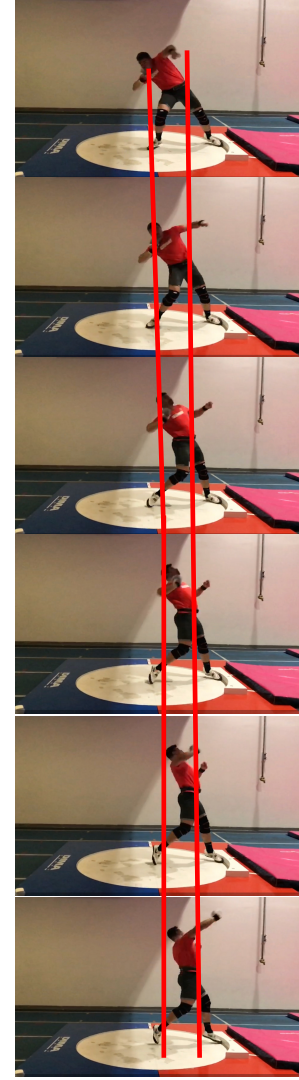
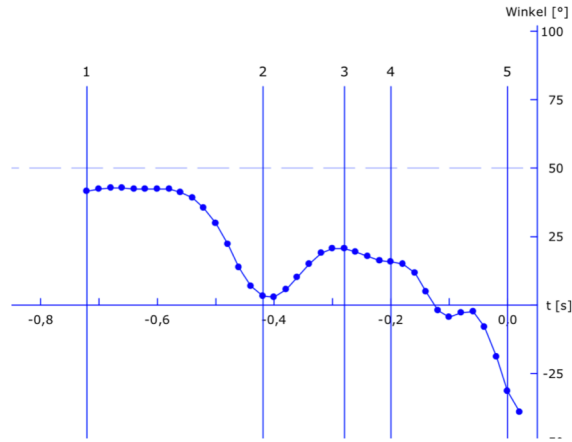
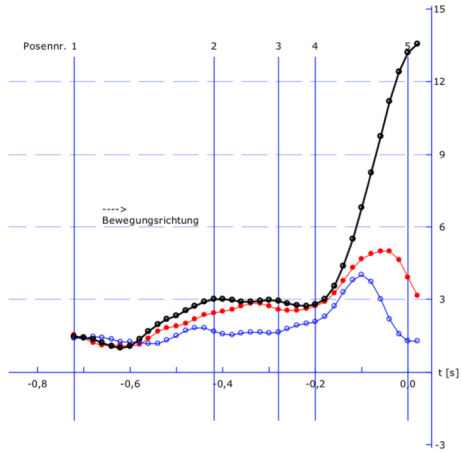
Right Leg:

- Reacts direct immediate left leg touchdown
- Explosive, hip dominant motion
 - slight internal rotation & extension of the right hip
 - less knee extension → knee down („turn & push the hip“)
- Vertical lift comes from ankle & left leg



Delivery

- Left-right interaction
 - Left leg decelerates body & left hip
 - right leg rotates hip forward around left leg
- Hip leads movement → pre-tension
- Sequenced hip-shoulder velocities
- No increase in separation





Simplification

- Don't talk about biomechanics in training
 - dynamic, rhythm & flow of movement
 - feelings (pressure on the hip, the ball)
 - working with pictures/metaphors („attacking the ground“)
 - ..
- Biomechanics are just to evaluate the progress

Throwing Training

- Variable but target-oriented
 - Drills and part movements to improve technique
 - not as much as possible, as much as needed
- Quality dictates quantity
- Work on causes, not on issues
- Dynamic more important than positions

Throwing Training

- Full throws in a well prepared and non - fatigued state
- In strength phases less throws and use of adequate shots (lighter)
- Numbers of throwing
 - Up to 6 throwing sessions/week
 - 6 - 35 throws /session
 - up to 180 throws / week
- Shots: 4.0 - 8.0 kg
- highest throwing volume: 4 - 6 weeks before main competition