



Biomechanics for terrified

$$L = v_o^2 / g * \cos \alpha_o (\sin \alpha_o + \sqrt{\sin^2 \alpha_o + [2gh_o / v_o^2]}) + / - l$$



2019-11-16 - Anders Borgström



Evaluation method

- Qualitative test
 - Subjective but based on experience



- Quantitative test
 - Strict measurable



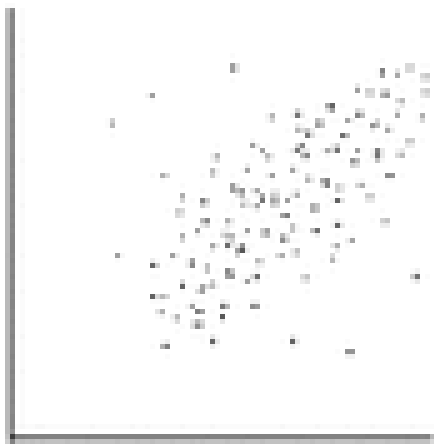
Standardized

- Possible to compare from time to time
- Strict rules
 - How to perform
 - Material/Equipment

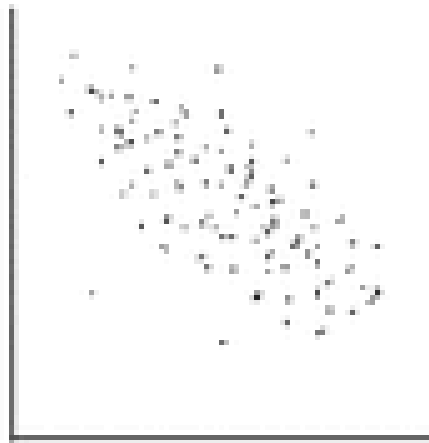


Correlation

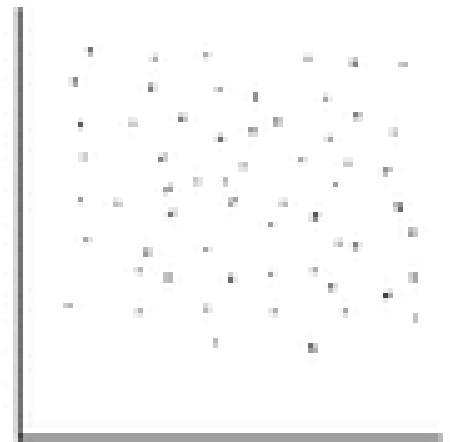
- Statistically comparison
 - test performance/performance in competition



A

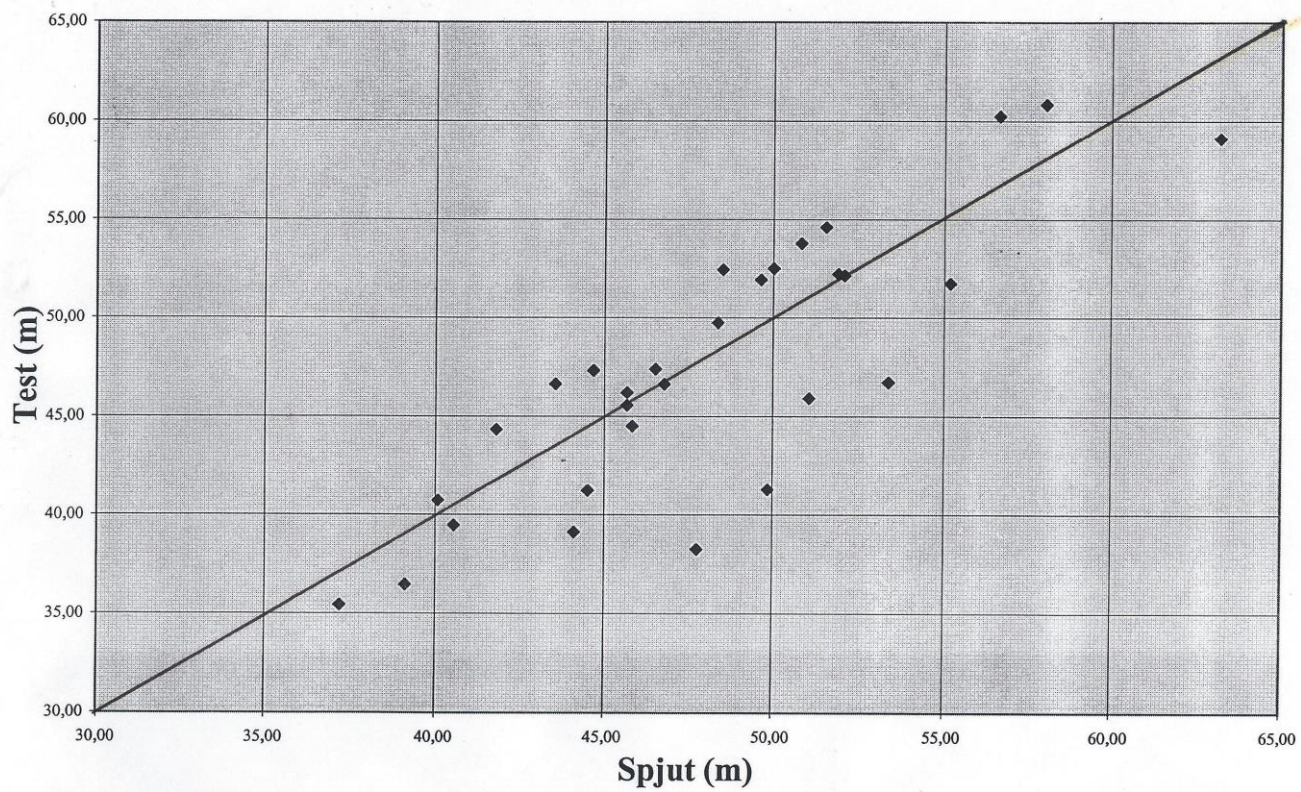


B



C

Samband spjutresultat och fysisk test; kvinnor; $r: +0,84$



Newton's Laws of Motion

- **Law of inertia:** A body continues in state of rest or motion with same speed and direction unless acted on by an external force
- **Law of acceleration:** For a given mass (m), the acceleration is proportional to the force applied; $F = m \cdot a$
- **Law of Action equals Reaction:** For every action there is an equal and opposite reaction.

Triple jump



Speed

Approach 11-6 m; 6-1 m; 11-1 m

close to 11 m/sec/10 m/sec

slightly lower than at LJ

Loss of speed (horizontal)

appr. 1 m/sec in each step



Ground contact

- Increasing

- Hop 120 msec

- Step 150 msec

- Jump 165 msec

- +/- 15 msec

Knee angle

- Not flex under

- 135 degr

- 125 degr

- 125 degr

Forces

Highest value (step)

12 times BW (15..... even 20 is mentioned)

Distances

■ Hop 35%

■ Step 30%

■ Jump 35%



What would it take to break the world record in men's triple jump!

Philip Graham-Smith & Paul Brice (2019)

ASPETAR – sports medicine journal

Biomechanics – the easy way







新光三越
SHIN KONG MITSUKOSHI



新 光 三 越 週 年 慶

熱 烈 展 開 中

Practical methodology

- What?
- Why?
- How?

Life itself is like a javelin throw.....



