



Rotating with discus and shot

an introduction

by

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Klaus Bartonietz - coach javelin throw

AFI ZOOM Video meeting
May 1st 2020
Athletics Federation of India

the implements

sling ball

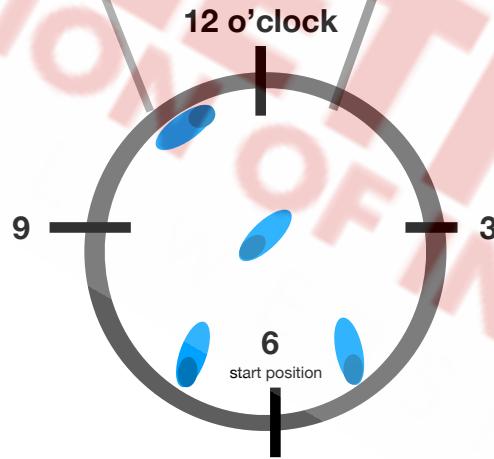


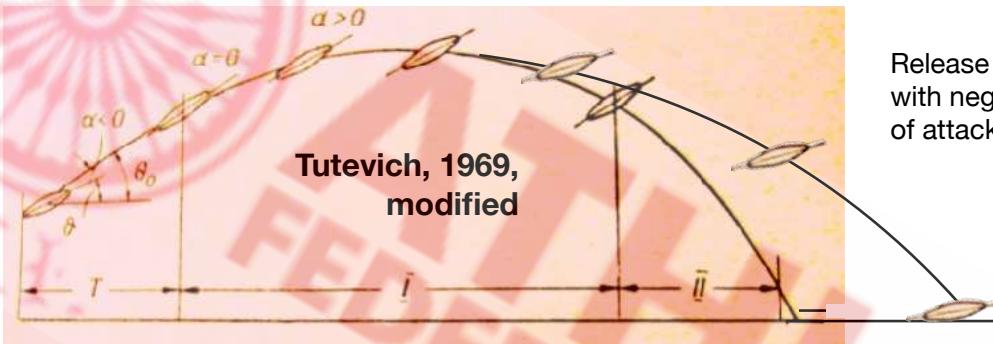
1, 1.5, 1.75, 2 kg
lighter & heavier for training



the circle

2.50m





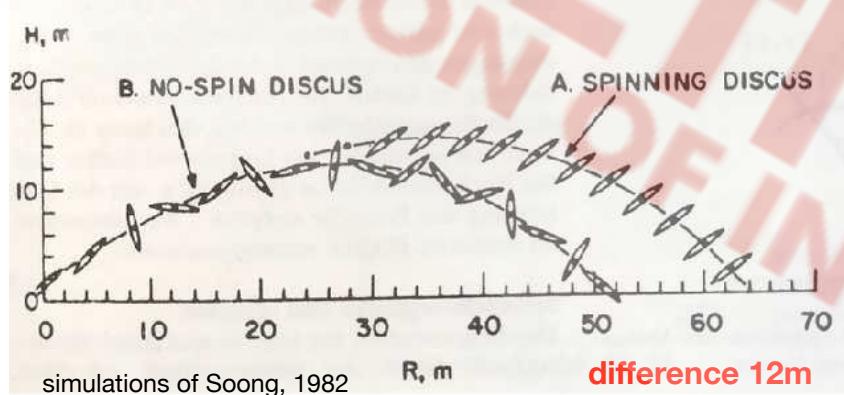
Release of the discus
with negativ angle
of attack

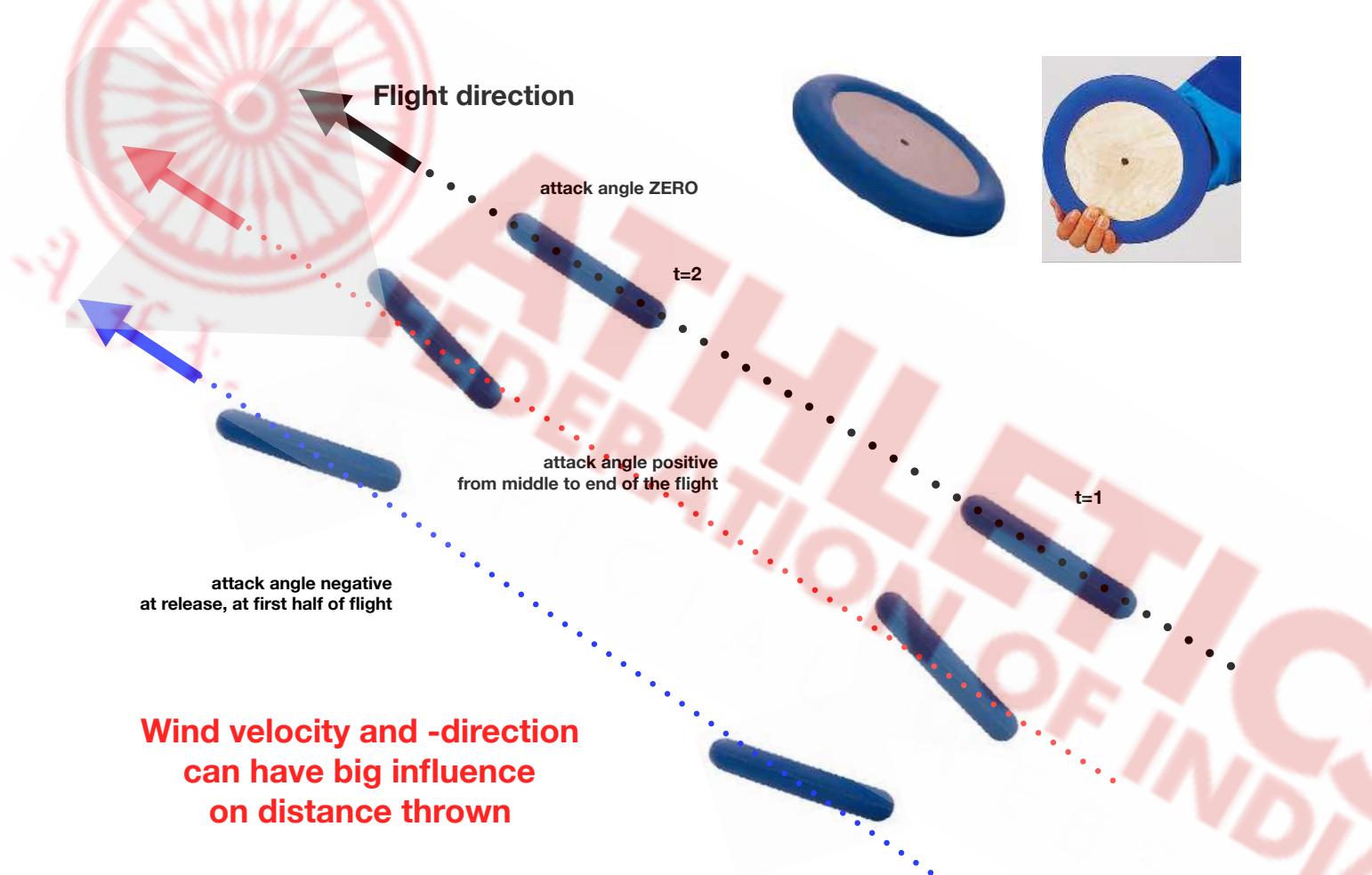


Рис. 2—11. Выброс диска с отрицательным углом атаки ($-\alpha_0$)

Tuttevic, 196

the discus can be seen
as an airfoil, a wing





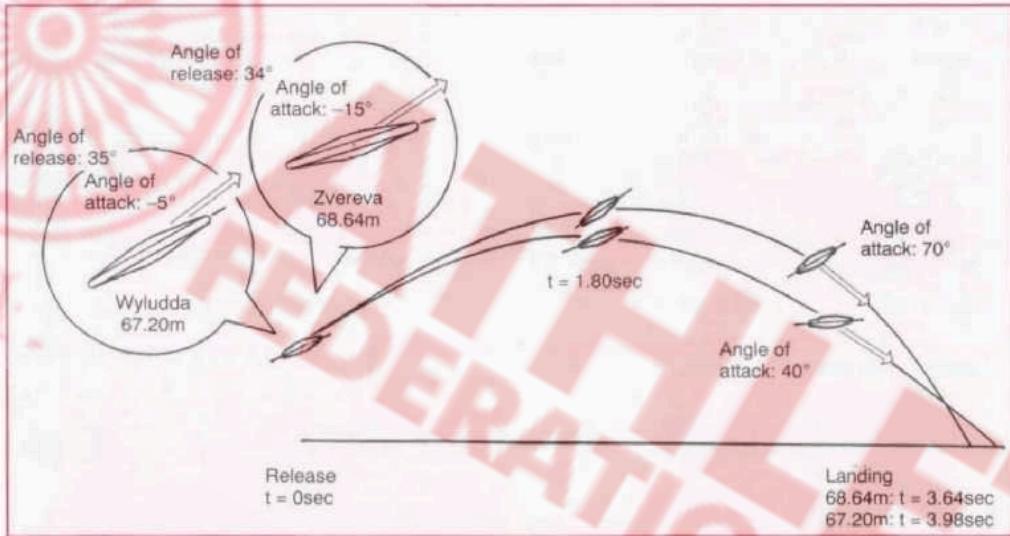


Figure 8: Simplified discus trajectories of Zvereva's and Wyludda's throws (arrows signify the direction of velocity of the discus)

Note: Up to angles of attack of about 45° the component of lift surpasses the component of air resistance (based on data from TUTEVIC 1969).

Teaching the discus throw - “Only perfect practice makes perfect”

1. Getting used to the implement, releasing it in a correct way

Rolling (bowling, not throwing) the discus off the hand (over index finger) over the ground,
focus on the clockwise release
Focus on long arm, low release
Goal: rolling of discus



Throwing the discus into the air,
Focus on long arm, release from index finger
starting with throws of 10-20cm for beginners
increasing with experience, hit ground with edge



Arm swings with the discus,
to get the feeling for the the discus control,
for the pressure on the fingers

sequences from video USTF Level I Discus Skills and Drills
accessed <https://www.youtube.com/watch?v=NxArm9vy9iU>



Figures from
DLV (eds.)
2011.

Jugend-Leichtathletik,
Philippika Sportverlag,
Muenster



1



2

2+3
“South
African”
drill



3



learning to shift body weight - from over right to over left foot

line of sight - left wrist (not over the shoulder)

left shoulder stable, no swing of left arm



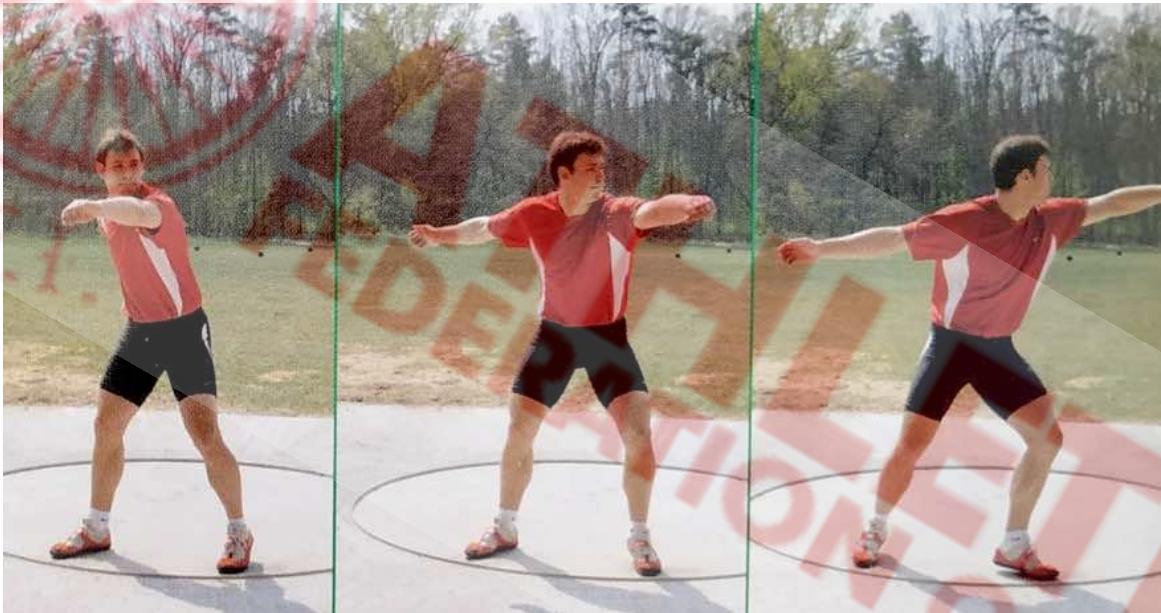
c.g. shifted
over support
ab.90%

Figures from
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Jugend-Leichtathletik,
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1. stepping with ball of right foot
counter-clockwise, each “hour”

2. wide “sweep” for half quarters,
quarters, half, full turn



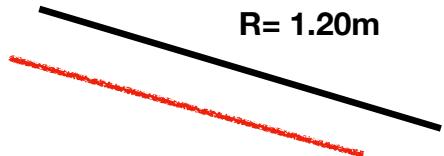
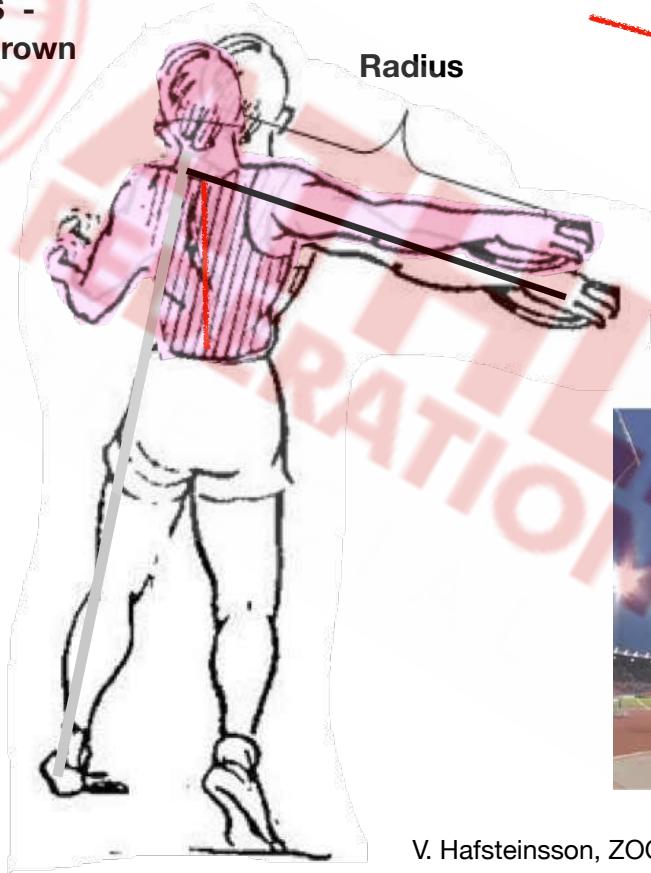
2. wide “sweep” for full turn

Figures from DLV (eds.) 2011. Jugend-Leichtathletik, Philippika Sportverlag, Muenster



- + 2 cm RADIUS -
- + 1m distance thrown

Tutevich, 1969



Daniel Ståhl 72.95m



from
V. Hafsteinsson, ZOOM-meeting, April 30 2020



<http://daypic.ru/wp-content/uploads/2011/08/3212.jpeg>



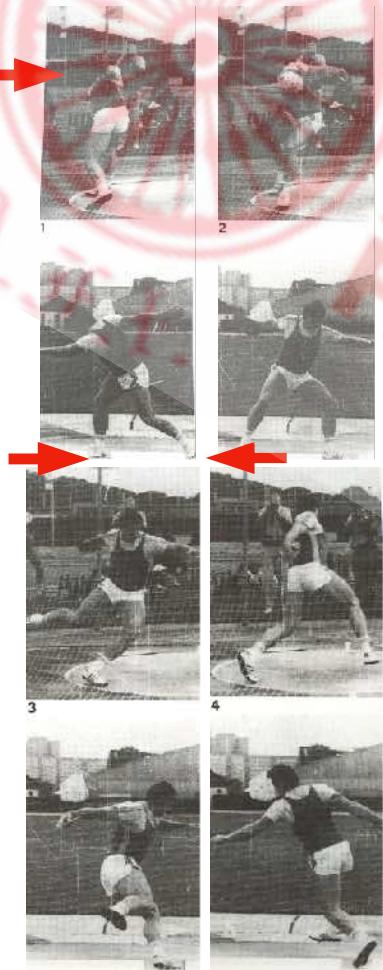
rolling the discus
off the fingers



the instant
of release



<http://www.meczyki.pl/newsy/diamantowa-liga-malachowski-wygrywa-konkurs-rzutu-dyskiem/29885-n>



Technique Model DISCUS THROW

wide initial stance, backswing of the discus over left heel

body weight shift from right over left leg, left leg work
turn-on
(metaphor "screw driver"),
right foot with long ground contact for pre-stretch
of muscles around hip

powerful swing/kick
of the right leg towards the middle of the circle

take-off left foot by ankle work, left knee not full extending
(avoiding a "jumpy" take off)
left side & head kept back

from Hinz et al, Wurf und Stoß, 1991



landing on ball of the right foot in the middle of the circle in a centered position (axis of the turn from right ball through the middle of the body), turn without a stop for a fast and early planting of the left foot (discus/throwing arm in 9 - 10 o'clock position)



work of the right leg (turning-extending) against the left leg, hip frontal to throwing direction at low point of discus trajectory



stable left side, wide radius of movement of the throwing arm ($\pm 2\text{cm}$ of radius corresponds with $\pm 1\text{m}$ in distance thrown by equal leg power: calculations of Tutevic, 1969)



release at shoulder level, spinning discus clockwise,
angle of release about 36 degrees,
angle of attack about minus 10-15 degrees,
right edge of the discus tilted down by hand/arm position

from Hinz et al, Wurf und Stoß, 1991



1



2



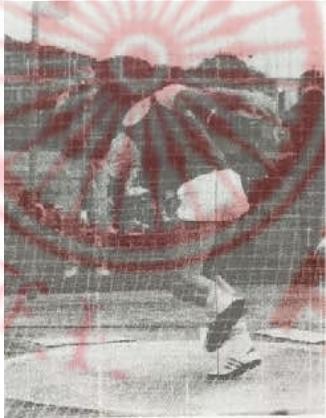
3



4



from Hinz et al, Wurf und Stoß, 1991



6



8



15



Jürgen Schult / GDR 70.46m Sept. 13 1988

from Hinz et al, Wurf und Stoß, 1991



Robert Harting

stills from slo-mo video clip, posted by

Khalid ALQAWATI , February 27 2015, source: <https://www.youtube.com/watch?v=4RXIlzMaO9U>



The throwing events at the World
Championships in Athletics 1995,
Göteborg – Technique of the world's best athletes
Part 2: Discus and javelin throw

 © by IAAF
11.1, 19-44, 1995

by Klaus Bartonietz, Russell J. Best and Anders Borgström

Jelena Zvereva/BLR 68.64m



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N-5 © by IAAF
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Jelena Zvereva/BLR 68.64m

rotational shot put

Raven Saunders/USA
19.33m 1.65m 5ft 5in



Danniel Thomas-Dodd
19.55m 1.66m

the best women 2019

Rank	Mark	Competitor	DOB	Nat	Pcs
1	20.31	Lijiao GONG	24 JAN 1989	CHN	1
2	19.68	Chase EARLEY	20 JUL 1994	USA	2
3	19.55	Danniel THOMAS-DODD	11 NOV 1992	JAM	1
4	19.47	Meggie EWEN	23 SEP 1994	USA	1
5	19.37	Christina SCHWANTZ	24 DEC 1985	CHE	3
6	19.28	Brittany CROW	06 MAR 1994	CAN	1
7	19.21	Alicia DUBITS-KAYA	25 JAN 1990	B.R	4
8	19.06	Fanny RCCS	02 JAN 1995	SWE	2
9	19.01	Jessica RAMSEY	26 JUL 1991	USA	3
10	18.95	Anita MARTON	15 JAN 1989	HUN	3
11	18.85	Michele CARTER	12 OCT 1985	USA	2q1

96 16.87m Kiran BALIYAN



the best men 2019

Rank	Mark	Competitor	DOB	Nat
1	22.91	Joe KOVACS	28 JUN 1989	USA
2	22.90	Ryan CROUSER	18 DEC 1992	USA
2	22.90	Tomas WALSH	01 MAR 1992	NZL
4	22.61	Darlan ROMANI	09 APR 1991	BRA
5	22.35	Darrell HILL	17 AUG 1993	USA
6	22.32	Michał HARATYK	10 APR 1992	POL
7	22.25	Konrad BUKOWIECKI	17 MAR 1997	POL
8	22.22	Bob BERTEMES	24 MAY 1993	LUX
9	21.64	Filip MIHALJEVIĆ	31 JUL 1994	CRO
10	21.80	Chukwuebuka ENEKWECHI	28 JAN 1993	NGR

34 20.92 Tajinderpal Singh TOOR

throwing the discus is helping to master the rotational shot put - and vice versa

important:

as early as possible to understand by teacher/coach and student/young athlete that each throw has understand the movement chain: to built up from the feet over knee - hip into the trunk, shoulders, arms and via hand into the implement.

stills from TV translation



how to place the shot
on the neck:
under or behind the ear





shot put from front spin technique from standing position



1:52



**shot put with half turn
“South African”
focus:
planting right foot und turn**

**shot put with 1 1/2 turn
(full movement)**

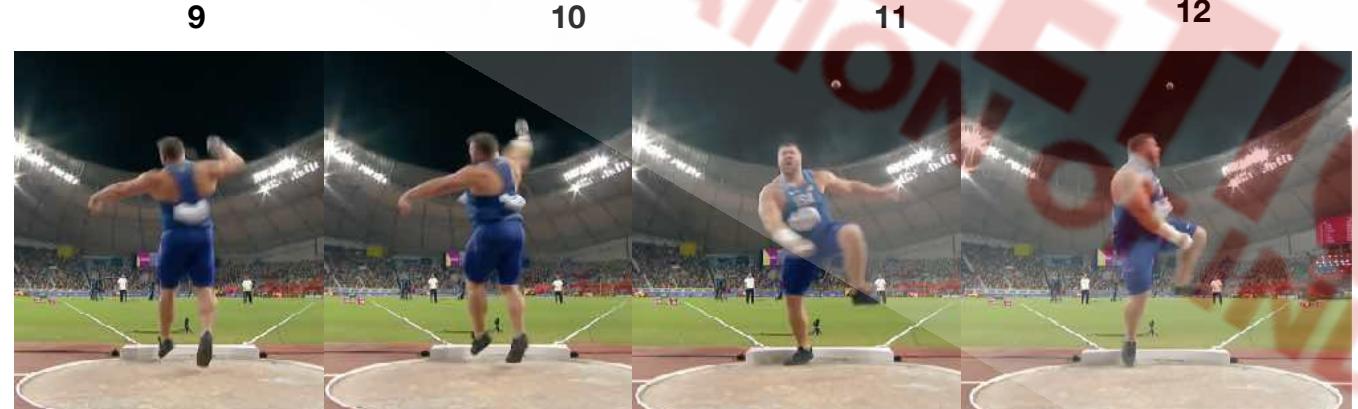
throw from standing position: <https://www.youtube.com/watch?v=ZPjaGtdaLLQ>
South African: [://www.youtube.com/watch?v=NSoLR1OJa-0](https://www.youtube.com/watch?v=NSoLR1OJa-0)



Brian Oldfield “South African” - 73 ft - 22.25 m

source of video: <https://www.youtube.com/watch?v=YKqwoRlgCLI>





13 14 15 16



13 14 15 16



Thomas Walsh/NZL training throw Doha 2019

source of video:

<https://www.instagram.com/p/B3H-b91h2Pe/?igshid=1bm1y52zrhzew>

1.85m, 16/17 years

1 turn

1 1/2 turn

from glide (15.22m)
after one year
with spin 19.46m

Source: Salzer, 2007





Basic fitness level of a young athlete (age 10-14) to become an athlete in any specific sport

- good endurance: swimming, biking, running
- well coordinated: different games such as volleyball, basket ball, head stand, hand stand, cart wheel
experiences in different throwing events: shot put, discuss throw, many different throws with medicine balls
- any kind of sprints, jumps (HJ, LJ), hurdles (running, jumping)
- handling the own body weight by different exercises, girls at least 50% of the boys' performances, examples are:
 - chin ups (minimum 6-10 times)
 - push ups (minimum 20)
- Note: at this age group can observed big differences between athletes in their biological age
- **When starting to coach - teach safety rules to young athletes first, on field, in gym, when train in a group!**



ध्यान देने के लिए आपका धन्यवाद

