

8^o CONGRESSO TÉCNICO CIENTÍFICO ANDEBOL

Múltiplos Caminhos - Melhor Andebol



18e19 JUNHO 2011

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UNIVERSIDADE LUSÓFONA**

PHYSICAL DEMANDS IN HANDBALL

WHAT IS HANDBALL LIKE

- ☐ STOP & GO SPORT
- ☐ LOT OF CONTACTS
- ☐ JUMPS & SHOOTING
- ☐ LANDINGS & FALLS
- ☐ ACCELERATION & STOPPING
- ☐ AGILITY & CHANGE OF DIRECTION

AGILITY, ACCELERATION, LANDINGS, CONTACTS,
DECELERATIONS, JUMPING, SHOOTINGS, DECISIONS...



HANDBALL IS STOP & GO SPORT

- ❑ CONDITIONING IS BIG MISUNDERSTANDING
(STEADY PACE vs INTERVAL PROTOCOLS)
- ❑ LOOK WHATS HAPPENING IN THE GAME
- ❑ GREAT NEUROMUSCULAR DEMANDS



CONTACTS IS ALL ABOUT

- ☐ CORE STRENGTH
- ☐ DYNAMIC STABILITY
- ☐ ANTIROTATION vs ROTATION
- ☐ EVERY TRAINING – CONTACTS
- ☐ PRIOR THE GAME (WARM UP)

JUMPS AND SHOOTING

❑ ECCENTRIC, CONCENTRIC AND
ECCENTRIC CONTRACTIONS

❑ CONTACT AND PUSH IS VERY OFFTEN

❑ BODY CONTROL AND STABILITY

❑ CONTRALATERAL MOVEMENT (DIAGONAL
PATTERN)

LANDINGS AND FALLS

❑ AFTER JUMP SHOTS AND PUSHING

❑ FOOT, KNEE, LUMBAR SPINE AND SCAPULAR STABILITY

❑ ANKLE, HIP, THORACIC SPINE AND SHOULDER MOBILITY

❑ PROPRIOCEPTION

ACCELERATION AND STOPING

❑ SPEED vs ACCELERATION

❑ 10 - 20 METERS

❑ NEWTON FIRST LAW ACTION – REACTION

❑ HORSE POWER (POWER IN THE GROUND) NOT REACH (STRIDE LENGTH)

❑ NO ACCELERATION WITHOUT STOPING

❑ ACCELERATION, DECELERATION, CONTACT,
JUMPS, LANDING...

❑ PRE-SPECIFIED AGILITY vs RANDOM AGILITY

❑ TIMING

❑ ABILITY TO MAKE DECISIONS IN A SHORT TIME

❑ NEUROMUSCULAR ACTIVATION

CONCLUSION

❑ MAIN THOUGHT?

❑ SINGLE LEG STRENGTH

❑ UNILATERAL OR CONTRALATERAL STRENGTH TRAINING

❑ ACTION-REACTION (STRAIGHT - ACCELERATION, LATERAL – AGILITY

❑ CONTACT, JUMPS, STOPPING, LANDINGS... ALL UNILATERAL

QUESTIONS?

- ☐ WHY WE IN OUR TRAININGS PRIMARY USE BILATERAL STRENGTH PROGRAM WITH EMPHASIS ON BODY BUILDING TECHNIC?
- ☐ SMALL AMOUNT OF CONTACT (OR NO CONTACT)
- ☐ LOTS OF JUMPING AND LOTS OF SHOOTING
- ☐ NO LANDINGS, ECCENTRIC CONTRACTION AND NO PROPRIOCEPTIONS
- ☐ SPEED INSTEAD ACCELERATION
- ☐ SPECIFIC ENDURANCE (LONG STADY PACE vs INTERVAL)

ANSWERS!

- ❑ FOCUS ON SINGLE LEG STRENGTH AND CONTRALATERAL ACTIVATION
- ❑ CONDITIONING THROUGH INTERVAL PROTOCOLS
- ❑ HOW MANY JUMPS AND SHOTS IS ENOUGH?
- ❑ ECCENTRIC CONTRACTION (LEGS AND ARMS)
- ❑ RANDOM AGILITY WITH TIMING AND ABILITY TO MAKE DECISIONS IN A SHORT TIME

YO YO RECOVERY

SUUNTO TRAINING MANAGER

PAGE1

6.4.2011

User : IVAN SLISKOVIC
Name : YO-YO REPKA
Activity :

DETAILS

Date : 18.12.2010
Start time : 11:23:50
End time : 11:50:27
Duration : 00:26:37,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 3,5
EPOC Peak : 118 ml/kg
Ventilation : 151 l/min
Oxygen cons. : 33 ml/kg/min
Respiration rate : 47 bpm
Energy cons. : 259 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 00:26:37,0
Dsc Time : 00:26:37,0
Flat Time : -00:26:37,0

HEART RATE

Max : 194 bpm
Avg : 152 bpm
Min : 79 bpm

Above : 00:00:00,0
In : 00:26:30,0
Below : 00:00:00,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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LEVEL 18-5 → 1920 m → 17 km/h → 4,72 m/s
A-Ath 171 bpm → SPEED 14,2 km/h → 3,94 m/s
HRmax 194 bpm

10	15	20	30
47	70	94	140
40	59	80	118

SUUNTO TRAINING MANAGER

PAGE1

4.4.2011

User : BALIC IVANO
Name : YO-YO 28.07.2010
Activity :

DETAILS

Date : 28.7.2010
Start time : 10:38:42
End time : 10:57:37
Duration : 00:18:55,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 5
EPOC Peak : 89 ml/kg
Ventilation : 152 l/min
Oxygen cons. : 35 ml/kg/min
Respiration rate : 38 bpm
Energy cons. : 208 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 00:39:05,0
Dsc Time : 00:39:05,0
Flat Time : -00:59:15,0

HEART RATE

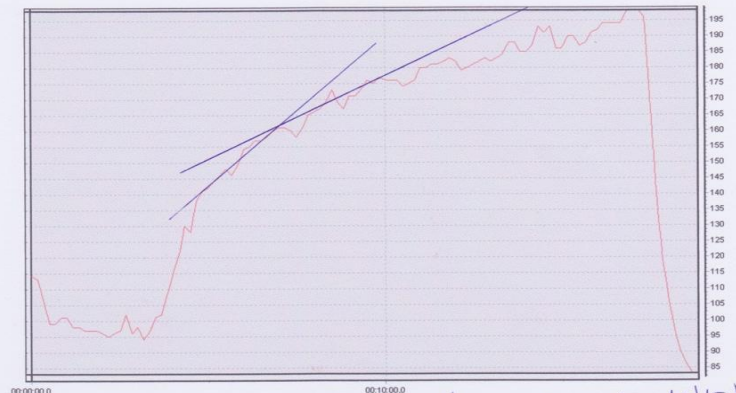
Max : 198 bpm
Avg : 152 bpm
Min : 83 bpm

Above : 00:00:00,0
In : 00:18:50,0
Below : 00:00:00,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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LEVEL 18-1 → 1760 m → 16,4 km/h → 4,55 m/s
A-Ath 162 bpm → SPEED 13,7 km/h → 3,8 m/s
HRmax 198 bpm

10	15	20	30
45	68	90	136
38	57	76	114

HANDBALL GAME

SUUNTO TRAINING MANAGER

PAGE1

6.4.2011

User : **BALIC IVANO**
Name : **CIUDAD REAL UTAKMICA**
Activity :

DETAILS

Date : **28.2.2010**
Start time : **4:59:47**
End time : **7:11:42**
Duration : **02:14:55,0**
Distance : **0 km**
Avg. speed : **0,0 km/h**
Max speed : **0,0 km/h**

BODY PARAMETERS

Training effect : **4**
EPOC Peak : **182 ml/kg**
Ventilation : **149 l/min**
Oxygen cons. : **36 ml/kg/min**
Respiration rate : **43 bpm**
Energy cons. : **1232 kcal**

ALTITUDE

High : **0 m**
Low : **0 m**
Ascent : **0 m**
Descent : **0 m**
Asc Time : **02:14:55,0**
Desc Time : **02:14:55,0**
Flat Time : **-02:14:55,0**

HEART RATE

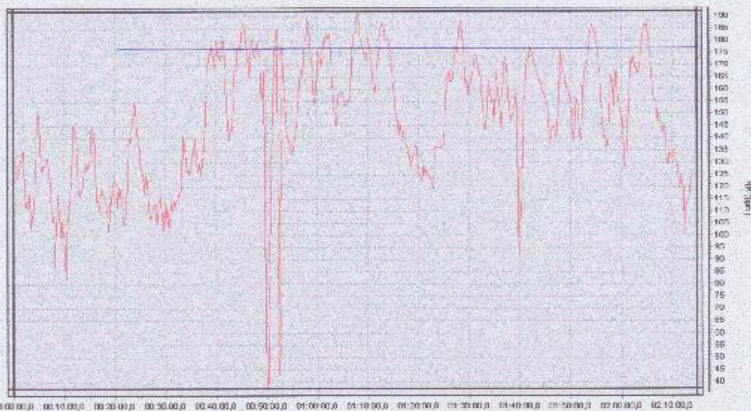
Max : **192 bpm**
Avg : **146 bpm**
Min : **37 bpm**

Above : **00:00:00,0**
In : **02:13:50,0**
Below : **00:01:00,0**

High limit : **200 bpm**
Low limit : **50 bpm**

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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SUUNTO

90-100% 13:50
80-90% 36:40

SUUNTO TRAINING MANAGER

PAGE1

6.4.2011

User : **BALIC IVANO**
Name : **HSV UTAKMICA**
Activity :

DETAILS

Date : **7.3.2010**
Start time : **4:50:52**
End time : **7:08:42**
Duration : **02:17:50,0**
Distance : **0 km**
Avg. speed : **0,0 km/h**
Max speed : **0,0 km/h**

BODY PARAMETERS

Training effect : **5**
EPOC Peak : **198 ml/kg**
Ventilation : **144 l/min**
Oxygen cons. : **35 ml/kg/min**
Respiration rate : **44 bpm**
Energy cons. : **972 kcal**

ALTITUDE

High : **0 m**
Low : **0 m**
Ascent : **0 m**
Descent : **0 m**
Asc Time : **02:17:50,0**
Desc Time : **02:17:50,0**
Flat Time : **-02:17:50,0**

HEART RATE

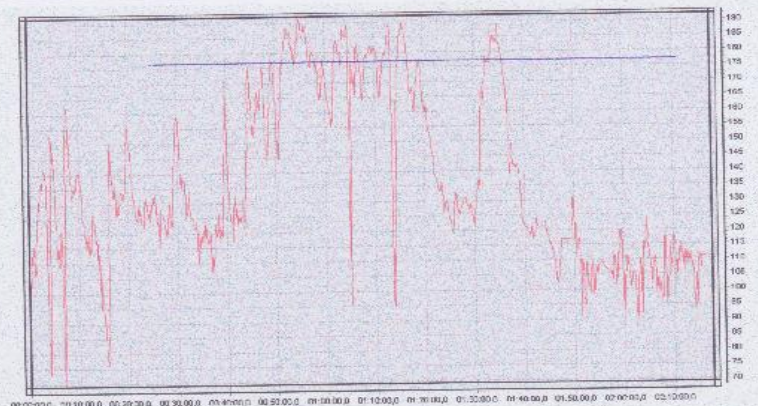
Max : **192 bpm**
Avg : **136 bpm**
Min : **69 bpm**

Above : **00:00:00,0**
In : **02:17:50,0**
Below : **00:00:00,0**

High limit : **200 bpm**
Low limit : **50 bpm**

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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SUUNTO

90-100% 21:40
80-90% 13:20

HANDBALL GAME

SUUNTO TRAINING MANAGER

PAGE1

6.4.2011

User : STEPANCIC
Name : UTAKMICA CIMOS KOPER
Activity :

DETAILS

Date : 20.8.2010
Start time : 19:38:59
End time : 22:21:46
Duration : 02:42:47,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 3,9
EPOC Peak : 155 ml/kg
Ventilation : 172 l/min
Oxygen cons. : 64 ml/kg/min
Respiration rate : 50 bpm
Energy cons. : 2106 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 02:42:47,0
Dsc Time : 02:42:47,0
Flat Time : -02:42:47,0

HEART RATE

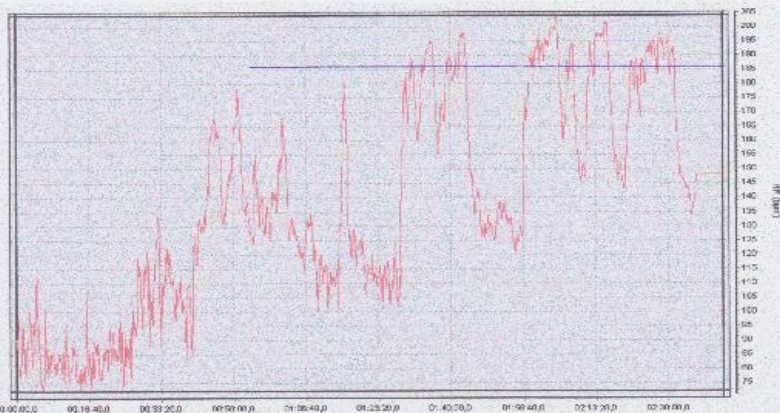
Max : 204 bpm
Avg : 137 bpm
Min : 72 bpm

Above : 00:01:20,0
In : 02:41:20,0
Below : 00:00:00,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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90-100% 24:20
20-90% 19:00

SUUNTO

SUUNTO TRAINING MANAGER

PAGE1

6.4.2011

User : STEPANCIC
Name : UTAKMICA PICK SZEGED
Activity :

DETAILS

Date : 26.8.2010
Start time : 17:08:04
End time : 19:35:53
Duration : 02:27:49,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 4,3
EPOC Peak : 193 ml/kg
Ventilation : 153 l/min
Oxygen cons. : 63 ml/kg/min
Respiration rate : 45 bpm
Energy cons. : 2222 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 05:43:08,0
Dsc Time : 05:43:08,0
Flat Time : -08:58:27,0

HEART RATE

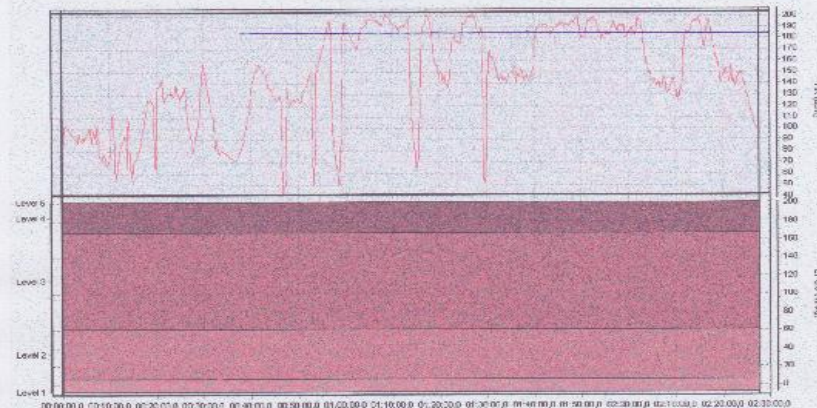
Max : 203 bpm
Avg : 145 bpm
Min : 41 bpm

Above : 00:00:50,0
In : 02:26:00,0
Below : 00:00:50,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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90-100% 33:16
80-90% 13:00

SUUNTO

HANDBALL GAME

SUUNTO TRAINING MANAGER

PAGE1

4.4.2011

User : IVAN SLISKOVIC
Name : UTAKMICA ZAGREB
Activity :

DETAILS

Date : 16.9.2010
Start time : 16:17:32
End time : 18:34:01
Duration : 02:16:29,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 4,3
EPOC Peak : 195 ml/kg
Ventilation : 151 l/min
Oxygen cons. : 32 ml/kg/min
Respiration rate : 47 bpm
Energy cons. : 1201 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 02:16:29,0
Dsc Time : 02:16:29,0
Flat Time : -02:16:29,0

HEART RATE

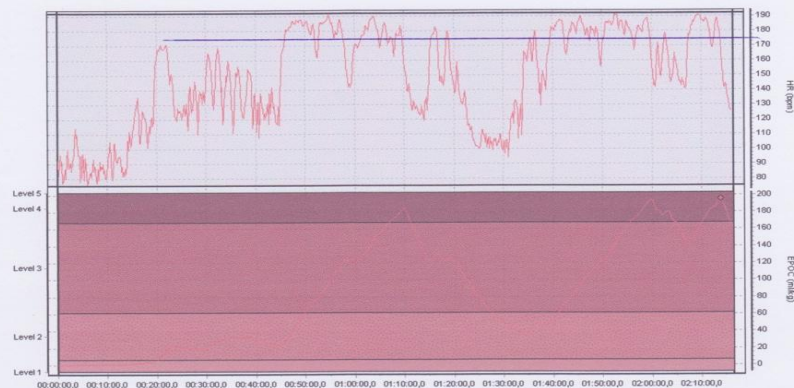
Max : 192 bpm
Avg : 148 bpm
Min : 75 bpm

Above : 00:00:00,0
In : 02:16:20,0
Below : 00:00:00,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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90-100% 42:30
80-90% 23:50

SUUNTO

PROTOCOLS

SUUNTO TRAINING MANAGER

PAGE1

4.4.2011

User : KOPLJAR
Name : 30-30
Activity :

DETAILS

Date : 12.8.2010
Start time : 10:24:53
End time : 11:02:07
Duration : 00:37:14,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 3
EPOC Peak : 76 ml/kg
Ventilation : 148 l/min
Oxygen cons. : 61 ml/kg/min
Respiration rate : 37 bpm
Energy cons. : 622 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 00:37:14,0
Desc Time : 00:37:14,0
Flat Time : -00:37:14,0

HEART RATE

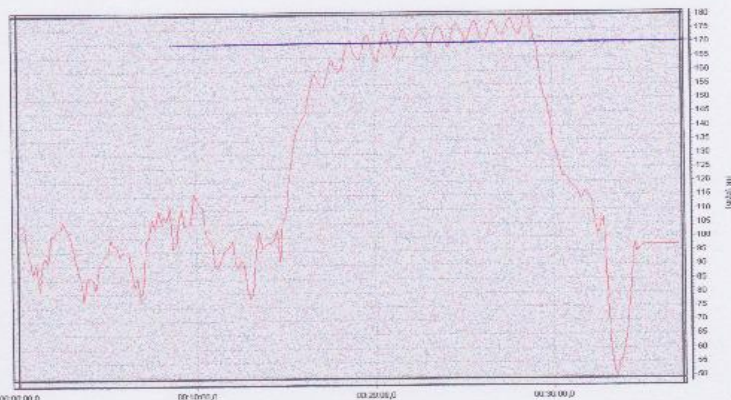
Max : 160 bpm
Avg : 124 bpm
Min : 49 bpm

Above : 00:00:00,0
In : 00:37:00,0
Below : 00:00:10,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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SUUNTO

90-100% 7:30
80-90% 5:50

SUUNTO TRAINING MANAGER

PAGE1

4.4.2011

User : BALIC
Name : 15-15 ROGLA
Activity :

DETAILS

Date : 8.8.2010
Start time : 18:49:10
End time : 19:06:12
Duration : 00:17:02,0
Distance : 0 km
Avg. speed : 0,0 km/h
Max speed : 0,0 km/h

BODY PARAMETERS

Training effect : 2,2
EPOC Peak : 35 ml/kg
Ventilation : 121 l/min
Oxygen cons. : 65 ml/kg/min
Respiration rate : 40 bpm
Energy cons. : 342 kcal

ALTITUDE

High : 0 m
Low : 0 m
Ascent : 0 m
Descent : 0 m
Asc Time : 00:17:02,0
Desc Time : 00:17:02,0
Flat Time : -00:17:02,0

HEART RATE

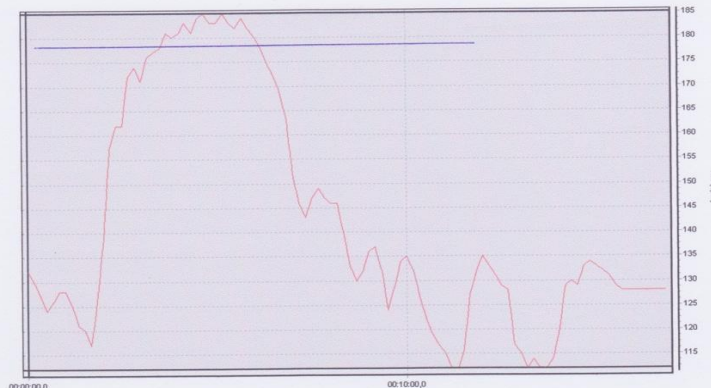
Max : 185 bpm
Avg : 142 bpm
Min : 112 bpm

Above : 00:00:00,0
In : 00:17:00,0
Below : 00:00:00,0

High limit : 200 bpm
Low limit : 50 bpm

INTERVAL

mark	split	lap	hr bpm	avg hr bpm	lap dist km	lap speed km/h	dist. Start km	speed start km/h	notes
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SUUNTO

90-100% 2:30
80-90% 2:10

EXAMPLES



**THANKS FOR YOUR
TIME...**



