



Physical Profile Top On-Ice Officials

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Physical Profile Top On-Ice Officials



PHYSICAL PROFILE TOP ON-ICE OFFICIALS

INTRODUCTION

What is the physical profile of a top on-ice official? What kind of training plan should be utilized by the on-ice official in order to reach the parameters of a top IIHF on-ice official regarding physical conditioning?

In order to answer on these questions, IIHF Sport Department in cooperation with the scientists and specialists of the BASPO (Federal Office of Sport Switzerland) in Magglingen, Switzerland worked out a special program for testing top IIHF on-ice officials to collect appropriate data. The test period included 3 years during which the group of the top IIHF on-ice officials (referees and linesmen) annually went through designed tests which simulates the work of the of the on-ice officials during the game.

Body mass, sprints and agility, specific endurance and trunk strength were selected as main based parameters of the physical profile.

The scientific group summarized the results of each individual and worked out mean values and target values of body mass, sprints and agility, endurance and trunk strength of top on-ice official.

Based on worked out physical profile the specialists from BASPO suggest the training program and exercises which should be utilized by the on-ice officials in order to reach established parameters.

However, it does not mean that if the on-ice official will reach these parameters he/she will be automatically classified as top on-ice official. It will only mean that he/she reached the physical conditioning which will give possibilities all 60 min being on the ice concentrate their attention on game actions. It was confirmed that tiredness and making decisions by the person are correlated. If the physical ability is dropping down during the game, it means that the on-ice official will be not in correct time and in correct position to make a right call or his/her positioning will be interfere with the progress of the game or movement of the puck or his/her reaction to the game actions will be downsized. This may refers to the outcome of the game.

Good physical conditioning is only a part of the success of the on-ice official. The other part is his/her officiating skills and officiating experience which works out using other training programs.

We hope that this material will be interesting for the on-ice officials; persons involving in officiating development in MNA's, directors of officiating and NA referee-in-chiefs.



1. PHYSIOLOGICAL ASSESSMENTS FOR ON-ICE OFFICIALS

In Enclosure 1 you will find the physiological assessments for on-ice officials in ice hockey and descriptions of the tests which have been selected by specialist from BASPO.

2. OVERVIEW PHYSICAL PROFILE

Below please find the “mean” and “target” values which were developed based on the collected data.

Mean values

Body mass	
BMI	26
Height	185cm
Sprints and agility	
10m	1.98sec
30m	4.62sec
Agility	4.90sec
Endurance	
yo-yo: 1400m/16.8 sp. Level	
Trunc strength	
ventral chain	224sec
lateral chain	93sec
dorsal chain	129sec

Target value

Body mass	
BMI	24-25
Height	187.4cm
Sprints and agility	
10m	1.88- 1.95sec
30m	4.34- 4.58sec
Agility	4.84sec- 4.99
Endurance	
yo-yo: 1480m- 1760m /17.2- 18.1 sp.level	
Trunc strength	
ventral chain	224sec
lateral chain	93sec
dorsal chain	129sec

Note: Please note that it does not mean that the person whose height is lower than 185 cm will not be considered as top on-ice official. The height is just the mean value of the testing group of the on-ice officials

3. TRAINING PLAN

3.1 Weekly Plan

Below you will find an example of a weekly training plan for a professional on-ice official:

Day	Contents	duration
Monday	Strengthtraining and core strength Intermittant endurance (e.g. 4x4)	70' 30'
Tuesday	Speed and Agility mobility	50' 20'
Wednesday	Corestrength Games	20' 60'-120'
Thursday	Jumps and Sprints Intermittant endurance (e.g. 20". 20" or 4x4, intervals)	40' 30'-40'
Friday	Strengthtraining and core strength	70'
Saturday	Core strength Endurance (eg. Inline, bike, jogging),	25' 45'-120'
Sunday		

3.2 Sprint and Agility Training

Before every speed session you should absolve a warm-up including some jumps, accelerations and active gymnastics. Very important is to respect the breaks between the sprints and agility drills! Per each 10 metre, 1 min. break. E.g.: 20 min. sprint at least 2min break!

Sprint – ABC:

Ankling



- 2 x 15m
- Land and push off the ball of the foot.
- Keep quiet but fast feet
- Minimize ground contact

Skipping



- 2 x 15m
- Foot strike should be explosive
- High knees, plantar flexion
- Don't slam the foot onto the ground
- Minimize ground contact

Lateral Skipping



- 1 x 15m right, left
- Foot strike should be explosive
- High knees, plantar flexion
- Don't slam the foot onto the ground
- Minimize ground contact

Straight leg shuffle



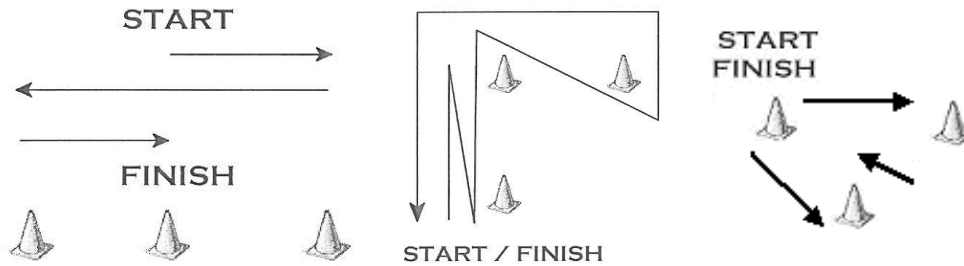
- 2 x 15m
- Keep the legs straight and foot dorsiflexed
- Fast ground contact with the ball of the foot
- Pull through with the hips groin

Sprints



- 3x – 5x 10m
- 2 x 20m
- 1 x 30m

Agility

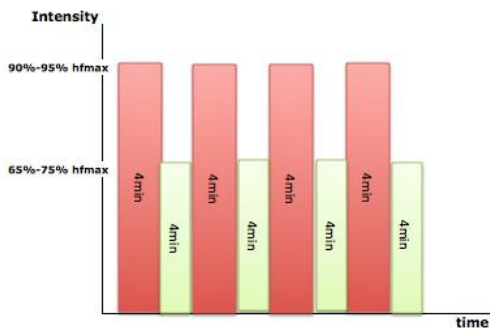


- Each drill 2x – 3. You can also choose other drill forms. Absolve them as fast as possible and mix between forwards, lateral and backwards movements.

3.3 Endurance Training

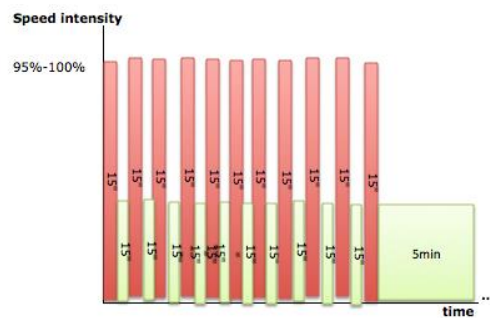
To improve your VO2max you should run, bike or skate. Next to your weekly endurance training it is recommended to absolve interval training like the 4 x 4 method which has a significant output on your VO2max. Another method is the 15" : 15" interval training which is more useful for linesmen because of the high speed intervals.

4 x 4



- Warm-up 5-10 min.
- Run 4 min. very hard (90% - 95% of your hmax) and then jog 4 min. Repeat this block totally 4 times.

15" : 15"



- Warm-up 5-10 min.
- Sprint 15" recover 15" active. Each block lasts 6 – 8 min.
- Absolve 3 blocks with 5 min passive recovery between each block

Basic endurance training:

Biking, running, cycling, skating, etc., in a moderate mood. While doing so, you should be able to talk. Your HF is between 65% - 80% of your max heart rate.

Running: 35' – 45'

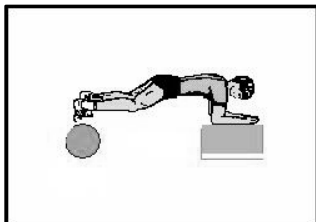
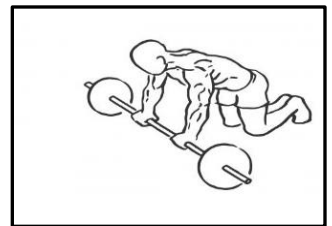
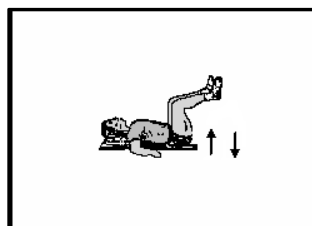
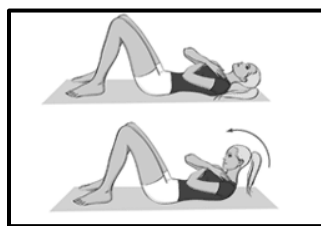
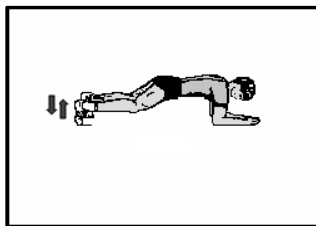
Cycling and/or biking: 60' – 120'

Skating: 60' – 90'

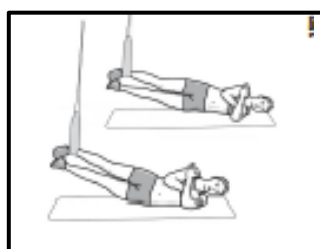
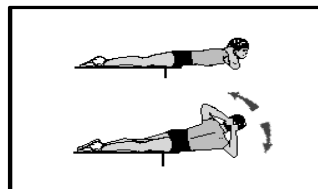
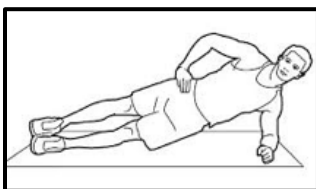
Note: Train specific Endurance and not general endurance during competition stage / season

3.4 Trunk Strength

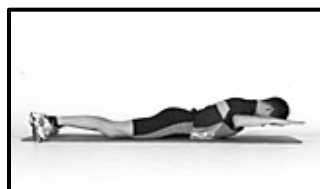
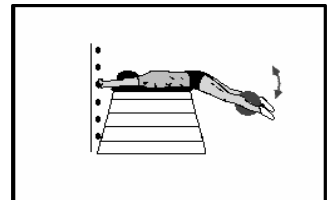
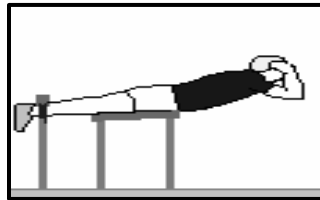
Ventral chain



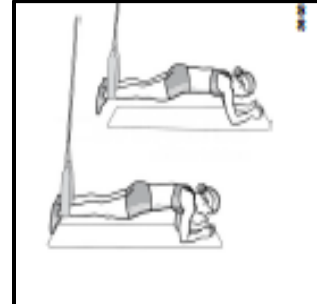
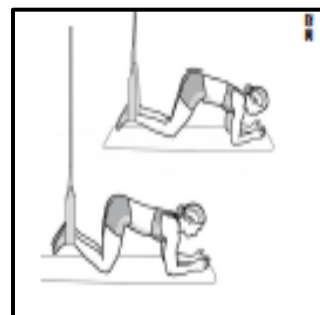
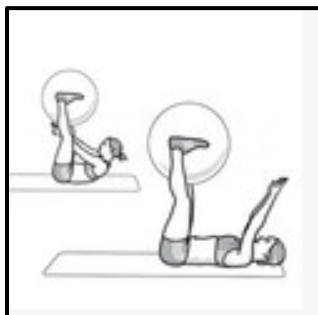
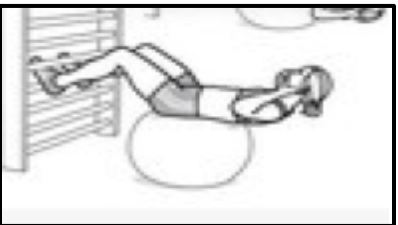
Lateral chain



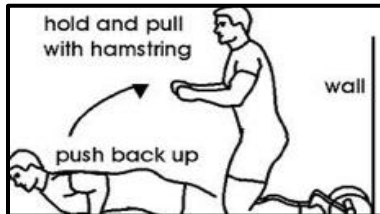
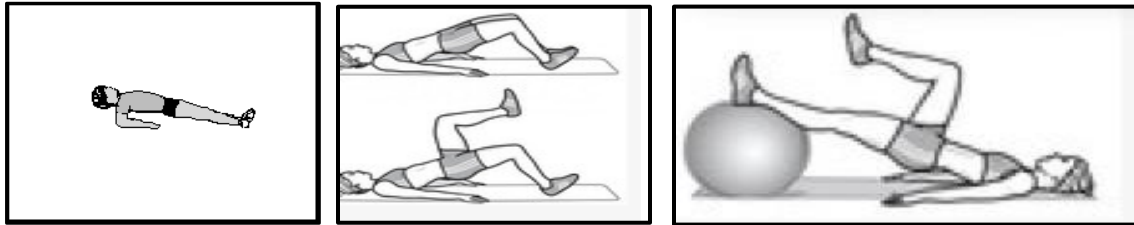
Dorsal chain



Mixed core strength



Hamstrings



Note: The core stability is important to achieve maximum athletic performance and to reduce the risk of injuries.

Training sessions: Before or after every training session you should do a work-out about 15' of core strength. At least 3 sessions per week. Choose between the different chains some exercises. You should work at least 30" per exercise!

4. ON WHAT TO FOCUS

Generally the focus needs to be on regular, physical training, with at least three to four weekly training sessions. As well during the season, regularity is essential. Having several short training sessions during a week makes more sense than just one long session. It is recommended to practice acceleration / speed before game day or even at game days!



Enclosure 1

Physiological Assessments For On-Ice Officials in Ice Hockey



Physical Profile Top On-Ice Officials

Physiological Assessments for Referees in Ice Hockey

Anthropometry

Hight [cm]



Fig. 1: Hight

Body weight [kg]



Fig. 2: Bodyweight

and body composition (fat and lean mass)
Dual-energy X-ray absorptiometry

Trunk Strength

Dynamic trunk muscle strength test

Subject has to do 3 different trunk testforms. Position and movement have to be hold as long as possible. Between the exercises is a ten minute rest.

1. Ventral trunk muscle chain



Fig. 3: Ventral trunk strength

2. Lateral trunk muscle chain



Fig. 4: Lateral trunk strength

3. Dorsal trunk muscle chain



Fig. 5: Dorsal trunk strength

Speed and Agility

30m- Sprint with split times

Subject should sprint 30m (electronically measured)

Measured parameters: Split times of 10m, 20m and 30m [sec]

Trials: 2, better trial is counted



Fig. 6: 30m- Sprint with Split times

Pro Agility Stop and Go (20m)

Subject should sprint from the starting line to the cone by touching the it (5m), back through the light gates (10m) to the other side by touching the cone (15m) and finally through the light gates again (20m).

Measured parameters : time [sec]

Trials: 2, better trial is counted

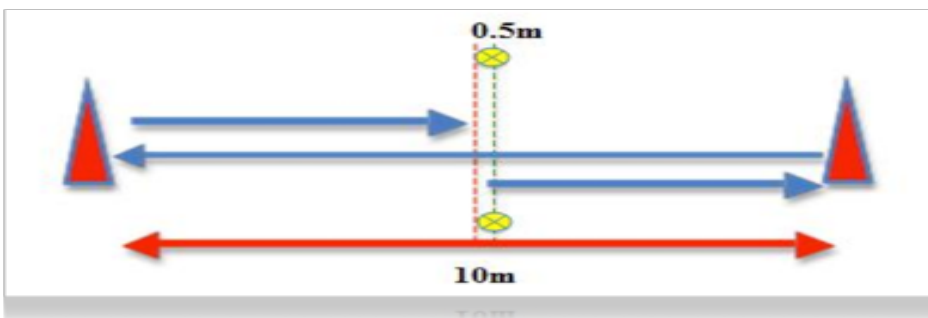


Fig. 7: Testdesign Pro Agility Stop an go (20m)



Fig. 8: Pro Agility Stop an go (20m)

Aerobic Endurance

Yo-Yo intermittend recovery test, Level 1

Subject has to run 2x20m back and forth between the starting line, turning and finishing line at a progressively increased speed controlled by audio beeps. Between each running bout, subject has a 10s active rest period, consisting of 2x5m walking around the cone. When subject twice have failed to reach the lines in time, the test is over.

Measured parameters: maintained speed [km^{-1}], and distance [m], maximal heart rate [bpm]

Trials: 1

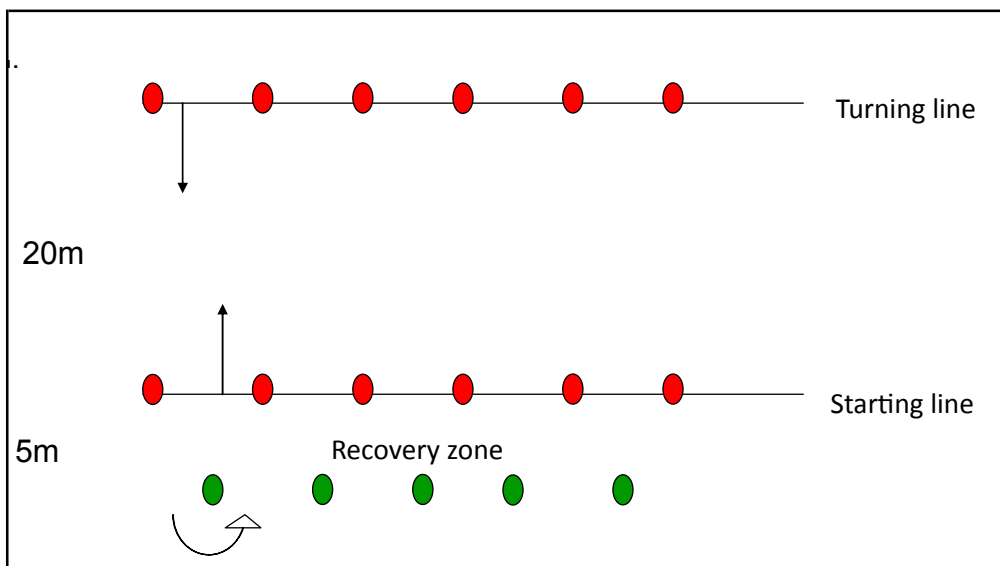


Fig. 9: Testdesign Yo- Yo Intermittent recovery test



Fig. 10: Yo-Yo Intermittent recovery test, turning line

Explosive Strength

Quattrojump

Subject has to jump on a force plate. The protocol consists of 3 Counter movement jumps (CMJ) aswell 3 unilateral CMJ and 3 Squat jumps (SJ). Both jumps have to be done without armswing.

Measured parameters : Peak power CMJ an SJ, unilateral CMJ
Leg Equilibrium Index (<10% normal)
Effect of Prestretch (4%-8% is normal)



Fig. 11: CMJ on force plate

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