



**FIBA**

We Are Basketball

# **BASKETBALL REFEREES – PHYSICAL DEMANDS & PROFILE**

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Throughout this publication, all references made to a player, coach, official, etc., in the male gender also apply to the female gender. It must be understood that this is done for practical reasons only.

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# PHYSICAL PERFORMANCE DEMANDS OF REFEREEING

From 2014, FIBA Referee Operations have been studying the physical performance demands of basketball referees. Studies have been carried out during the main FIBA competitions on a total of 3884 games (1 Aug 2020).

At every competition, in addition to officiating their games, referees undertake a fitness test and a body composition test. This is designed to enhance their performance.

The games were monitored across 4 main groups, senior men and women and junior men and women.

The data analyses have been distributed for following groups:

Gender, age, region, fitness test, body composition, distance, speed, accelerations and heart rate (main characters).

This document explains the main physical demands that a basketball referee should be able to expect in the top level (physical profile of basketball referee), based on the studies.



## PHYSICAL PROFILE

Height, Weight, Body fat % and Body Mass Index (BMI), are the parameters analyzed in every competition.

183 cm and 84 Kg are the average height and weight for male FIBA referees, and 173 cm and 67 Kg for female FIBA referees.

Body fat is the parameter in order to be healthy and to have a good court presence.

Men average body fat for FIBA referees is 20,84% and women average body fat is 27,94%. It is recommended for FIBA referees to be under 20% body fat for men and under 28% body fat for women.

## GAME DEMANDS

In FIBA competitions, official games are the most important part and referees are preparing specifically for them. In order to prepare FIBA referees in the best way as possible, every year all main FIBA competitions are analysed, to match game demands with the specific physical training plans. The training plans try to be as specific as possible and fulfilling the performance demands that FIBA referees will face during the games.

To study the cardiovascular and locomotory responses during matches, FIBA Referee Operations is using a scientifically tested device; Polar Team Pro System (Polar Electro OY, Kempele, Finland), which integrates multiple sensors (10 Hz GPS, accelerometer, gyroscope, digital compass, sampling at 200 Hz) coupled with in-built HR monitoring and proprietary software, is used to determine speed and distance indoors and record HR continuously at 1 second intervals.

With this technology it is possible to have a clear idea about what are the game demands and how referees can be prepared for these demands. Obviously, every game and every referee is different, but these data sets, help us to optimize our training process and game performance. Every training plan prepared for a specific competition is adjusted in the best way as possible to the referee individuality.



### The most relevant average data per game

Game duration:	2h 10 min (including warm-up period 20 min prior the game)
Warm up distance:	500 m.
Game distance:	4615m.
Maximum speed:	23 Km/h
Maximum Heart rate:	170 bpm
Maximum Heart rate %:	92%
Medium Heart rate %:	64%
Calories:	1763 kcal
Number of maximum sprints (over 19 km/h):	9
Distance/min:	14 m/min
Number of accelerations:	1392

### ***FITNESS TEST***

After a comprehensive study, in 2017, FIBA Technical Commission introduced a new fitness test for top level FIBA Referees (in addition of FIBA Referees Basic Fitness Test), namely FIBA Referees Elite Yo-Yo Test. One of the main reasons was that the basic test did not replicate game demands. Maximum game speed is around 23 Km/h and in the basic test referees only get to 12-13 Km/h. In the FIBA Referees Elite Yo-Yo Test, referees are required to achieve 17,5 Km/h, and also it is intervallic (more similar to a basketball game than the basic test which is continuous), something that replicates much better the game demands.

The most important aspect is the recovery period index after 1' and 3'. The referees are asked to have more than 15% recovery index after 1' and 40% recovery index after 3'. The results of last years 1' recovery index was 16.38%, and the 3' recovery index was 46.81%. So, if the referees obtain these recovery indexes, they are fully prepared for game demands because they are able to have a fast recovery during the games.

## AVERAGE PHYSICAL PROFILES



Female	All	Male
<b>35,6 yrs</b> Age	<b>36,8 yrs</b> Age	<b>38,0 yrs</b> Age
<b>173 cm</b> Height	<b>178 cm</b> Height	<b>183 cm</b> Height
<b>67 Kg</b> Weight	<b>75,4 Kg</b> Weight	<b>84 Kg</b> Weight
<b>22,2</b> BMI	<b>24,4</b> BMI	<b>24,8</b> BMI
<b>27,9%</b> Body fat %	<b>23,5%</b> Body fat %	<b>20,8%</b> Body fat %

## AVERAGE DATA FROM VARIOUS COMPETITIONS

	Max HR	Med HR %	Max HR %	Distance (m.)	Distance/min [m/min]
Senior Men	167	66	91	4732	22
Senior Women	173	66	89	4528	17
Youth Men	169	63	90	4690	10
Youth Women	168	62	90	4539	13

	Max Speed [km/h]	Sprints (over 19 Km/h)	Total Acelerations	Calories (kcal)
Senior Men	23	10	1178	2042
Senior Women	23	11	1252	1504
Youth Men	24	7	1211	1798
Youth Women	24	5	1194	1754

# STANDARD QUALITY GLOBAL CONNECTION



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