ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2016; 2(12): 383-385
www.allresearchjournal.com
Received: 23-10-2016
Accepted: 24-11-2016

Mukesh Kumar
Research Scholar at LNIPE, Gwalior, Madhya Pradesh, India

Correspondence
Mukesh Kumar
Research Scholar at LNIPE, Gwalior, Madhya Pradesh, India

Physiologycal profile of inter university basketball players

Mukesh Kumar

Abstract
The present study was aimed to prepare the profile for inter university basketball players. The non-probability sampling technique was used by the investigator to select the samples from the population. The data was collected on 30 male basketball players from lovely professional university. The average age of the subjects was 23 ± 3.67 years. The data was collected with the help of digital spirometer and coopers test was used to measure the vo2 max. The data was analysed through the SPSS 22 version, by applying the descriptive statistics. After analysing the data it was concluded that basketball players needs normal level of physiological fitness, which an individual use to maintain their fitness.

Keywords: Forced vital capacity, peak inspiratory flow, peak expiratory flow and VO_2max

1. Introduction
The VO2max or maximal oxygen uptake is a key physiological measure of cardiovascular fitness and can help to explain differences in sporting performance between individuals. Maximum oxygen uptake (VO2max) refers to the highest rate at which oxygen can be taken up and consumed by the body during intense exercise (Bassett & Howley 2000). Traditionally, the magnitude of an individual's VO2max has been viewed as one of the most important predictors of endurance performance. A classic study, conducted in the 1970's at Ball State University, confirmed the importance of VO2max to endurance performance with findings indicating a strong correlation between VO2max and 10-mile run times (Costill 1970) [1]. Prolonged exercise requires sustained energy provision to maintain muscle contraction and is accomplished through the continual production of ATP (adenosine triphosphate), the universal energy molecule. The production of ATP is accomplished through three metabolic pathways (breakdown of a fuel to release energy), which include the phosphagen system (the production of ATP from creatine phosphate), glycolysis (glucose breakdown), and mitochondrial respiration (aerobic metabolism within the mitochondrion of the cell). The first two pathways are only capable of energy production for short durations; consequently, ATP regeneration for extended exercise is accomplished predominantly through mitochondrial respiration. The biochemical reactions involved in mitochondrial respiration depend on continuous oxygen availability for proper functioning. Enhanced oxygen delivery and utilization during exercise will improve mitochondrial respiration and subsequently the capacity for endurance exercise. Both central (heart, lungs, and blood vessels) and peripheral (tissue extraction of oxygen) physiological functions can limit VO2max. The relative importance of each function in limiting endurance performance has been discussed, researched and debated by exercise physiologists for decades. The ability of the cardio-respiratory system to transport oxygen to the exercising muscles refers the central component of VO2max (Roberts & Robergs 1997) [4]. The role of the central component is for oxygen to be transported from the atmosphere and delivered to the muscles where it is utilized during mitochondrial respiration to produce ATP. The main central limitations to oxygen delivery are pulmonary diffusion, cardiac output, and blood volume and flow (Bassett & Howley 2000).

1.1 Objective of the study
The objective of the study is to make the profile of inter university basketball players.

1.2 Significance of the study

The study will be helpful for sportsperson, coaches and physical educationist to judge the physiological capacities of an inter university sportsman.

2. Methodology

For the purpose of this study the data was collected with the help of purposive sampling method under non-probability sampling technique. The data was collected from lovely professional university during inter class basketball championship held in 2014-15; the data was collected from only those students who are qualify for university camp. The average age of the players was 23 ± 3.67 years. The data was collected with the help of digital spirometer and coopers test was used to measure the vo2 max. The data was analysed through the SPSS 22 version, by applying the descriptive statistics.

2.1 Findings and Interpretations

In the following sections the statistically analysed data has been presented.

Table 1: Descriptive Statistics of the Basketball Players

Statistics					
		forced V.C	**peak expiratory flow**	**peak inspiratory flow**	**vo2 max**
N	Valid	30	30	30	30
	Missing	6	6	6	6
Mean		4.4303	4.0763	113.0830	53.2583
Std. Error of Mean		.10287	.12448	3.44089	.50515
Median		4.5100	4.0300	112.4200	52.1000
Mode		4.02[a]	3.38	78.45[a]	56.00
Std. Deviation		.56343	.68182	18.84655	2.76680
Variance		.317	.465	355.193	7.655
Skewness		-.786	.072	.097	.715
Std. Error of Skewness		.427	.427	.427	.427
Kurtosis		.269	-1.530	.162	-.376
Std. Error of Kurtosis		.833	.833	.833	.833
Range		2.19	2.08	81.26	10.50
Minimum		3.01	3.05	78.45	49.00
Maximum		5.20	5.13	159.71	59.50
Percentiles	10	3.5780	3.2460	82.4040	50.1650
	20	4.0200	3.3640	98.1720	51.0600
	25	4.0350	3.3800	100.0225	51.3000
	30	4.1870	3.4300	105.0500	51.6000
	40	4.3500	3.7140	109.0540	51.9400
	50	4.5100	4.0300	112.4200	52.1000
	60	4.6300	4.4340	115.4960	53.4000
	70	4.8090	4.6130	125.6710	54.5600
	75	4.8700	4.6900	128.2475	56.0000
	80	4.9800	4.7820	128.3840	56.0000
	90	5.1000	5.0480	134.6800	57.2600
a. Multiple modes exist. The smallest value is shown					

2.2 Development of the profile chart of the basketball players

For developing the profile chart of the basketball players we need to explain minimum score, maximum score, mean and standard deviation out of all the descriptive statistics for all the parameters mentioned in the problem.

Table 2: required descriptive statistics of all the variables

	Minimum	**Maximum**	**Mean**	**Std. Deviation**
forced V.C	3.01	5.20	4.4303	.56343
peak expiratory flow	3.05	5.13	4.0763	.68182
peak inspiratory flow	78.45	159.71	113.0830	18.84655
vo2 max	49.00	59.50	53.2583	2.76680

2.3 Conversion of Data into Standard Scores

For converting the data into standard score the given formula is used ($z = \frac{(x - \bar{x})}{s}$). The prepared chart is mentioned below in Table 3:

Table 3

Variables	min(Z)	mean(Z)	Max(Z)
forced V.C	-2.52	0.00	1.37
peak expiratory flow	-1.51	0.00	1.55
peak inspiratory flow	-1.84	0.00	2.47
vo2 max	-1.54	0.00	2.26

2.4 Linear Transformation of the Standard Scores (Profile Chart)

For removing the effect of negative values, the linear transformation of the standard scores is done by using the transformation equation T = 50 + 10 x Z. The linear transformed profile chart is given below in the table:

Table 4: transformed standard scores of minimum, maximum and average of all the variables

Variables	min(Z)	mean(Z)	Max(Z)
forced V.C	-151.250927	50	81.96160319
peak expiratory flow	-90.3176961	50	92.72303908
peak inspiratory flow	-110.257925	50	148.4450645
vo2 max	-92.3449198	50	135.3548825

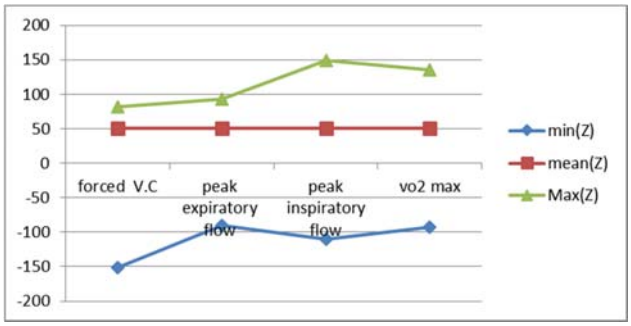

Fig 1: Graphical Representation of the Profile Chart of Basket Ball Players

2.5 Interpretation of the Results

The interpretation of the profile chart of the basketball players are as follows:

- The mean and median of all the variables constructed in this study are nearly equal.
- S.E. of mean is the least for the (.10287), whereas the maximum for the peak inspiratory flow (3.44089).
  As we know the Skewness value more than twice its standard error indicates a departure from symmetry and if the value lies between the twice of S.E.S the data curve fallows the normal curve. So, following this princip`le the data of all variables fallows the normal curve because the value of the variables forced V.C, peak expiratory flow, peak inspiratory flow and vo2 max are between the twice of its standard error i.e. -.786, .072,.097 and .715 respectively.
  Thus, it can be interpreted that the data of all the variables are normally distributed
- The distribution of the variable forced V.C, peak expiratory flow, peak inspiratory flow and vo2 max fallows the normal curve (mesokurtic curve) because the value of all the variables is lies between twice of kurtosis error.
- Minimum and maximum of the Forced vital capacity, peak expiratory flow, peak inspiratory flow and vo2 max of basketball players is ranges between 3.01 to 5.20, 3.05 to 5.13, 78.45 to 159.71 and 49.00 to 59.50 respectively, which indicate basketball players requires average level fitness, (Because the normal/average person fallow these values to make him fit).
- Percentile scale can be used to draw various conclusions about the different parameters for instance p_{20} of Forced vital capacity is 4.0200 which indicates that around 20% of basketball players had Forced vital capacity below the lower limit and hence be categorized as very low level of Forced vital capacity. Similarly p_{10} of peak expiratory flow, peak inspiratory flow and vo2 max is 3.36, 98.17 and 51.06. So it can concluded that only 10 percent of basketball players need to improve himself in physiological parameter while 90% of basketball players physiological capacity is more than average (acc. to norms)

3. Reference

1. Costill DL. Metabolic responses during distance running. Journal of Applied Physiology, 1970; 28:251-255.
2. Honig CR, Connett RJ, Gayeski TEJ. O2 transport and its interaction with metabolism: a systems view of aerobic capacity. Medicine and Science in Sport and Exercise, 1992; 24:47-53.
3. Costill DL, Fink WJ, Pollock ML. Muscle fiber composition and enzyme activities of elite distance runners. Medicine and Science in Sport and Exercise, 1976; 8:96-100.
4. Robergs RA, Roberts S. Exercise Physiology: Exercise, performance, and clinical applications. St Louis, Missouri: Mosby, 1997.
5. Robergs RA, Roberts S. Exercise Physiology: For fitness, performance and health. Boston, Massachusetts: McGraw, H-Hill, 2000.
6. Wilmore JH, Costill DL. Physiology of Sport and Exercise (2nd ed.). Champaign, IL: Human Kinetics, 1999.