

Research

Aerobic Fitness as a Superior Predictor Factor to Estimate the Optional Body Weight among the Soccer Players

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Abstract

Aerobic training is the best mode of exercise for burning fat. While previous studies have shown that weight change alone may not detect important beneficial changes in body composition associated with aerobic training. Thus, this issue regard, the current research focused on aerobic fitness as superior predictor factor to determine the optional body weight, midst 160 male soccer players under 19 years. Tested by Cooper test as a physiological parameter to esteem Vo2max and weight to height as anthropometric parameters to estimate the BMI and body fat. Results showed that fat percentage augmentation leads to a decrease in aerobic fitness, as the best factors inflicting the Vo2max levels among football players better than BMI. On this base, the current study supports that level of Vo2max revealed the impact body fat percent as an important factor to estimate body composition changes relative to optional competitive weight among sportswomen. State in this study based on BFP measurement to be a better criterion than BMI for prediction the low VO2max aerobic capacity among the soccer players.

Keywords: BFP; BMI; Vo2max; Control Weight; Soccer Players

Introduction

There is a wide range of approaches to assessing optional body weight were the most suitable request the laboratory practices. State by preventing studies as costly methods [1], not suited for every day medical practice [2] or physical control progression training tests. The opposite of aerobic performance field tests that can estimate the maximal oxygen up take associated with categorizing aerobic fitness when testing large groups.

Whereas Wener, et al confirm that Vo2max is affected by genetics, training, gender, age, and body composition [3].

Founded on the above and the contextual, which confirmed aerobic fitness as cardiovascular fitness [4] correlate to health as quality of life [5], helping the players/ human to maintain the recommended body weight [6] or ideal body weight [7]. As part of the weight control program among athletes [8]. Confirmed by Sayyed, et al [9] in the use of aerobic (endurance) activity. As one of the best forms exercises, weight control

programs, definite by lower body fat percentage and higher lean mass as optimal for athletes to enhance their performance [10] regulars to their body fat training allied to their aerobic capacity levels [11].

Supported in the current study via VO2max index as a superior predictor factor to estimate the optional body. Recommended for greater competitive body health [12], based on the body fat as less metabolically active than lean body mass, the case of athletic performance, confirmed by Rosalinda, et al, as an adjusted weight used to control the energy diet Vo2max, that is primarily resolute in the aerobic capacity of the working [13]. While Joseph, et al, suggests that the key is to develop predicted values from Vo2, which takes into account age and sex, and the relation between body weights correlated with height [14], as well as the distribution of body weight, confirmed by Ronald. K [15].

Material and Methods

Sample

The data used in this study were obtained from the database of team 5 Physical Education Institute Laboratory OPAPS for the academic years 2014-2015. In terms of player-related data, 160 male soccer players under 19 years, from the Algerian championship national territory was examined in parameters (anthropometric and physiological decided for

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the current study) by Team 5 at the end of the physical preparation for the years 2014-2015. After the agreement with their coach. All examinations were achieved at the earliest weeks, before the start of the championship. While in experiments of the study protocol and methods, we choose the laboratory OPAPS “Institute of Physical Education of our university” who approve it, by the professors of football and physiologist of effort.

Experimental Protocol

To determinate the functional capacity to perform a maximal exercise, as one of the intended goals of any form of stress testing [16]. Verma SS, et al, confirms that the applications of these regression equations will be of practical importance to biomedical scientists engaged in the development of a simple procedure for indirect assessment of Vo2max [17]. Confirmed by Sharp TA, et al [18] as a positive correlation between Vo2max and fat-free mass and negatively with adiposity. However, Huuskonen A, et al, admits that relative aerobic capacity is associated with lower BMI and levels physical performance [19]. Following these steps, we chose regression analysis as the most appropriate method to analyze combinations of variables chosen to study.

Testing Protocol

The Maximal Aerobic Capacity: We use the maximal aerobic capacity formula of Test Cooper:

Vo2max (ml/min/kg) = 22.351 * Distance (km) - 11.288, confirmed by John G, et al, as corresponding values laboratory of the estimated Vo2max [20], with a precision set between 90- 95%, according to [21], described by the Cooper Institute as pointers of best picture endurance of maximal aerobic capacity [22], consistent with the levels of health and quality of life [23].

4.3.2. Weight and Height: Height (m) and weight (kg) were each measured in the standing position [11], to calculate the body mass index (BMI) = weight (kg) /height (m²) [24]. Well Go to Y, et al confirms the Vo2 peak is associated with biological status, after its connectivity with height related to weight [25]. Whereas ideal body weight is the body weight for

a given height that is statistically associated with the greatest longevity [26], which can be estimated either by reviewing the medical record for the body weight [27] and calculated mathematically by dividing weight in kilograms by the square of height in meters [28]. Whereas this formula represents the calculi of BMI, where Vishwanath S, (2011) confirms that some football players, maybe overweight because of their increased lean body mass, but not obese or overrated [29]. Since BMI is not a perfect measure, it does correlate strongly with percent body fat, according to Lauren, et al [30]. Form the above, we use the formula proposed by Deurenberg, et al. $BFP = (1,2 \times BMI) + (0,23 \times age) - (10,8 \times Sex) - 5,4$ [31] as inexpensive and convenient means for soccer player.

Statistical Analyses

Data analysis was performed using SPSS 22.0 for Windows (32- bit). Data collected from the tests showed a normal distribution and homogeneity, presented as a means, standard deviation, Shapiro-Wilk tests and Levene’s test. Regression analyses were performed to analyze the combined of the variables chosen for study. The relationship between the variables was analyzed by Pearson correlations (r).

Results

The characteristics of the study sample are provided in table 1. All the variables accepted normality founded on the Shapiro -Wilk test and the homogeneity established by Levene’s test. Depending on normative data for Vo2max, our sample ranges between fair and good [32]. Appreciate by Peter R.J. Reaburn (2014) via the soccer players within more than 36.3 ml/kg/ minasbenefitVo2max norms [33]. Support the case of this study through BFP norms, which categorize our sample in a normal fitness category, according to Raul Garrido-Chamorro, et al [34]. Admit by BMI categories, which classifies our players in the normal weight body mass index (BMI), reported by Marie A [35] from 18.5 to 24.9.

Table 1: Presents the baseline characteristics of the participants Physiological and Anthropometric characteristics of the total group.

	N	Min	Max	Mean ± S. D	Shapiro-Wilk		Levene's test	
	Stat	Stat	Stat	Stat	Stat	Sig	Stat	Sig.
Weight	160	50.48	79.93	64.38± 6.22	0.98	0.06	1.80	1.81
Height		156.00	192.00	174.71± 6.26	0.99	0.17	0.27	0.29
Vo2max		43.96	49.39	45,54± 1.99	0.99	0.47	3.16	0.37
BFP		12.00	18.00	13,30± 2,21	0.99	0.19	1.17	0.29
BMI		18.77	24.06	21.15± 1.84	0.99	0.14	2.14	0.15

All the correlations in Table 2 are highly significant at $P \leq 0.05$ and 0.01 . Where Vo_{2max} is strongly negatively correlated with BFP follows by BMI and weight in the opposites of Height, which is very positive. Accounted by Pantel is (2012) that the strong relationship between BMI and BFP suggests the further use of BMI in adolescent soccer players [36]. While to determine the superiority of aerobic performance in predicting the change of body composition, we chose regression as a statistical model. See Table 2: Presents the correlations between the variables tested in the current study.

Pearson Correlation	Weight	Height	BMI	BFP
Vo_{2max}	-0.43**	0.32**	-0.74**	-0.75**
**. Correlation is significant at the 0.01 level (2-tailed).				

View Table 3 Model 1, the analysis shows BFP and Height as superior's factors inflicting the levels of aerobic fitness. Support in the case of this study based on the variables excluded from the regression. Which revealed that adjustment of aerobic capacity requests the measurement of fat-free mass estimate base on highest BF than BMI [37].

Discussion

Based on the statistical applied. Through tables 2. Our results approved the results record by Pantelis (2012) that the strong relationship between BMI suggests the further use of BMI in adolescent soccer players [36]. Whereas as superior's factors impacted the Vo_{2max} our result Table 3, support the finding of N K out lianos that BFP is more effective than BMI [38] in predicting the aerobic capacity. Sustenance by Peter S via height size and its relation to body fat distribution as a superfactor

to estimate Vo_{2max} [39]. Establish by Allen L & P rentice A [40] among BMI measurement that cannot distinguish between the mass of body fat or muscle mass and thus is not appropriate for use with athletes in order to evaluate their body fat status. Confirmed by Jose, et allinuse of BMI to predict optimal body weight for an athlete can be misleading. Interpret by this last that the predictive formula was developed based on average individuals, not athletes [41]. Founded on these results and limitations of the research, we approve the indication quote by Connie Henke, et al [42] to esteem the adjusted athletics body weight [43], we need to detect the excess body weight in the form of a fat percent than total, reports at a distinct disadvantage in almost practiced sports [44]. Conclude by Mondal H, & Mishra SP (2017) via obesity in terms of Fat% attend a better criterion than BMI for prediction the low Vo_{2max} [37]. Admitted in this study through weight loss recommendations can be achieved by the improvement of aerobic functioning supported by the observed relationship between percent of body fat and maximal oxygen uptake more than BMI alone, account in similar as a cautioned measure in athletes. Proofs guide us to agree that body weight and body composition as a part of a weight-control program [45], must consider the correlation between vo_{2max} and lean body mass that is more closely associated with height than weight [46]. Inspected in this study via BFP attend to be a better criterion than BMI for prediction the low Vo_{2max} associate with the optimal competitive body more than BMI [47]. Findings, which confirm Vo_{2max} as the best index for aerobic fitness and the control program body fat loss [48]. Whereas to manage body weight [49], in the case of our sample, we recommend the analysis of BFP as better criterion than BMI for prediction body change correlated to Vo_{2max} as the most important factors for any complete fitness program [11].

Table 3: Presents the results of regression model 2 analyses relating Vo_{2max} and the variables tested in the current study.

Model Enter	R	R ²	Adjusted R ²	Coefficients	T	P	F	P
1	0.76 ^b	0.58	0.57	(Constant)	14,68	0.00	106,37	0.000 ^b
				BFP	-13,25	0.00		
				Height	2,13	0.03		
a. Dependent Variable: Vo_{2max} b. Predictors: (Constant), %Fat, Height Excluded Variables: Weight, BMI.								

Conclusion

Our study back up the hypothesis that the high extensiveness of heaviness among sports women. Request the control of the levels of Vo2max as a superior factor to predict the ideal competitive body weight. Admit in the case of this study based on the body fat measurement as a super factor to predict the level of VO2max in sports women better than BMI. Determine by Mondal H, & Mishra SP (2017) via obesity in terms of Fat% attend to be a better criterion than BMI for prediction the low VO2max [37]. Establish in the present based on regression model to esteem the aerobic capacity adjusted for optional body weight. Where the program shows the BFP and height as the superiors factor in predicting aerobic capacity associated with changes body composition relative to optional bodyor loss. Support by literature in the estimates of physiologic capacity, which can be confounded by variations in fat mass. When adjustments are made with body mass because fat mass increases the body mass but do not contribute markedly to oxygen uptake during the exercise.

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