Eating Habits of the Riders of Middle Distance in Training, Brazzaville, Congo

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Summary: A survey was conducted in Brazzaville from March 3 to March 17 20016, the sample was of 30 athletes, 6 girls and 24 boys aged 17-33 years. The objective of this study was to calculate supply macronutrients of the half-fondiers from clubs to athletics in Brazzaville during the training period and compare his food intake to the standards of the food balance of modern nutritionists. The method used was '24-hour recall' type 'any given day' for 3 consecutive days. An inquiry sheet was made available to respondents who wore the following information: food intake, and anthropometric data. The results presented carbohydrates: 76.19%, lipids: 12.77% and the protein: 11.04%. A balanced diet was presented as follows: PA / PV: 1.2; LV/LT: 0.6 and the LA/LT: 0.3. All in all, feeding his athletes half-fondiers does not provide a standard daily energy intake even if food balance is in comparison to the standards. It would be necessary to include a nutritionist within these clubs in order to regularize the nutrient intakes for the health benefit.

Keywords: Eating habits; half-fondiers; period of training.

1 Introduction

The sport is a set of physical activities and sports (APS) including Athletics is one of its components. These activities are critical in the development of those who practice them. They are also vectors of good health and professionalisation. Athletics includes racing, throws and jumps. In the races we have the middle distance races. Middle distance

2 Materials and methods

2.1 Period and study

We have made in the Commune of Brazzaville, a prospective study to three passes in the 11 track

races are so named because they fight over Middle distances between sprint and the background (IOC., 2000) [1]. Practitioners of this discipline are called the half-fondiers. They compete at competitions over distances between sprint and the background.

A bipod start, the half-fondiers do their run in a more or less sharp pace before crossing the finish line. They lie in the aerobic system lactic. It asked to provide effort, and thus energy expenditure to achieve a good performance.

Several studies are interested in training, others to the physiology to psychology to physical preparation to bring athletes to their full form during the competition. However, to our knowledge, there almost no studies that looked at the diet of athletes practicing middle-distance race. It's as well that we have proposed to study on the eating habits of the riders of middle distance of 11 Brazzaville track League athletic clubs.

However, it is well aware that for speaking of action as a whole for living beings, it must inevitably energy. This energy comes from the power supply. However, food is the amount of food to consume or ingest every day to cover all of the expenses and ensure the nutritional balance of the individual. There are common rules to all who can help avoid some physical failures to the effort and a good recovery (Mc Ardelle et al., 2001) [2]; good nutrition is an important factor for improving the performance.

The objective of this study was to examine whether the nutritional values of athletes practicing Brazzaville's athletic clubs middle-distance races can meet to improve their performance.

League clubs in their respective training sites. Our study took place during the month of March, precisely from 3 to 30 27 full days. This term is explained by the simple fact that athletic clubs are spread in the city of Brazzaville. We carry 3

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descents in the training of athletes of such clubs sites.

We did the quantification of the foods consumed by the athletes by the 24-hour recall method. For this, a questionnaire was made available to athletes. The questionnaire asking about the composition of the breakfast, lunch and the next evening, we took information from the dinner. The last day of enquiry of composition of the meals of the athletes surveyed was in all clubs a weekend day.

2.2 Population and sample

The target population for this study consisted of all the athletes and girls practicing the race of middle distance of 11 of the Commune of Brazzaville athletic clubs. Our sample consisted of athlete's girls and boys practicing racing middle distance of the commune of Brazzaville athletic clubs. This sample is virtually the same as the population because the numbers are reduced in number of athletes practicing middle distance races. Were included (e) s in our sample all athletes girls and boys practicing the race of middle-distance running in one of the city of Brazzaville athletic clubs agreed the food survey in question and is training regularly. Were excluded from the sample, all of the athletes who did not meet the inclusion criteria.

2.2.1 Conduct of the inquiry

With the certificate of authorization to search duly signed by Research Director and countersigned by the academic Secretary of the superior Institute of Education physics and sports (I.S.E.P.S), we had the full power move on the field of investigation for research.

Thus, our study was preceded by a pre-survey. This pre-survey was conducted from 8 to 16 February 2016. She was to get information on the number of clubs to athletics in the city of Brazzaville, training sites, making contact with the leaders, athletes and visiting sports facilities, as well as the purpose of our study.

The survey itself took place 27 days covering the period from 3 to 30 March 2016. She was to collect data for the amount of food ingested by athletes in training to establish the energy balance.

2.3 Methodology

2.3.1 Anthropometric data: the following body measurements have been taken: the size and weight; measures according to the technique recommended by (Fidanza F., 1991) [3]. The values of the size and weight have allowed the calculation of body mass index (BMI).

2.3.2 The food data: the method used was the reminder 24 hours. For this, a methodological guide to maintenance as a form of survey (questionnaire) has been available to these subjects. The plug was the information on the following variables: food intake (breakfast, lunch, afternoon tea and evening meal) in 3 consecutive days including 1 weekend day. Filling of the cards was under the control of the investigator for reassurance of the validity of the information provided by the survey topics. The investigator was required to fill out record of athletes who did not read and write by questioning.

Foods listed on the cards were compiled in a table of food composition for use by Africa (a project report, 1970) [4] synthesizing multiple sources (Lathan M.C., 1979) [5], and improved compared to those used in the Congo (Mbemba F., 1986) [6] and Europe (Souci S. et al., 1994) [7]. Daily reports (absolute and reported to body weight values) in different were calculated, then translated in terms of nutrients. The interest to the macronutrients: carbohydrates, lipids, and protein.

A balanced diet was calculated in the following way: reports in animal protein / protein plant (Ap/Pp) expressed in absolute terms, in fat of vegetable origin / total fat (fv/Tf) expressed in absolute value and fat of animal origin / total fat (the Fa/Tf).

The results of the different nutrient intakes were compared contributions recommended by the French Association of safety of food (AFSSA) and proposed contributions by (Menod and Flambrois, 2000) [8]

The data were entered and analyzed by the Software Package Statistical Social Science (Spss) Version 17.5 (Word 2010 and Windows-8). The results are given in table form. The average, standard deviation, coefficient of variation were calculated.

Obésité très sévère, obésité sévère, obésité modéré, normaux, maigreur légère, maigreur modéré, maigreur sévère. Pourcentage, nombre des sujets.

3 Results

3.1 Nutritional status of subjects (Table 1)

Order N°	Nutritional status	Subjects	
		n = 30	%
1	Verysevere obesity	/	/
2	Severe obesity	/	/
3	Overweight	/	/
4	Obesity moderate	1	3.3
5	Normal	23	76.7
6	light thin	4	13.3

7	Moderate thinness	2	6.7
8	Severe leanness	/	/

Legend: % : Percentage, n : Number of subjects.

The normal were among 23 which is a percentage of 76.7%; light inwardly presented 04 athletes either a percentage of 13.3% and the inwardly moderate presented 2 athletes either a percentage of 6.7%.

3.2 Anthropometric data of subjects (n=30) (Tableau 2)

Order N°	Variables	Mini	Maxi	$\bar{X}$	δ	CV (%)
1	Age (an)	17	33	22.22	2.15	11.84
2	Poids (Kg)	46.7	33	55.4	5.22	9.32
3	Taille (cm)	1.50	1,88	1.67	0.05	3.57
4	IMC (Kg/m^2)	1.74	25.33	19.76	1.95	9.83

Legend: Mini: Minimum, maximum: Maximum, BMI: body mass index, X̄: average, δ: deviation, CV: Coefficient of variation.

In most of the variables, the average was accompanied by the standard deviation. The minimum and maximum age was 17-33 years, 22.22±2.15 with a coefficient of variation 11.84 percent. There is a dispersion of the values; the coefficient was greater than 10. The weight was 55.4±5.22 kilograms /Personne 9.32% variation coefficient. The size was 1.67±0.05 cm with a coefficient of variation of 3.57. BMI body mass index) presented 19.76±1.95 Kg/m2; the coefficient of variation came to 9.83%. There is a collection of values around the mean and the coefficients were lower than 10.

3.3 The food balance sheet of macronutrients (table 3)

Order N°	Nutrients	Carbohydrates	Lipids	Proteins	Total
1	Energy for the balanced diet(Kcal)	2339.1 55%	1275.9 30%	637.9 15%	4252.8 100%
2	Brought energy (Kcal)	3240.3 76.19%	542.8 12.77%	469.8 11.04%	4252.9 100%

Legend: Kcal : Kilo calorie, % : Pourcentage.

Provided energy: carbohydrates have presented 3240.3 kilo calories are 76.19%; lipids were 542.8 kcal are 12.77% and energy supplied by protein showed 469.8 kilo calories or 11.04%. The total macronutrient was 4252.9 kilo calorie 17794.13 kilo joules.

3.4 A balanced diet of the Subjects (Table 4)

Order N°	Nutriments	Valeurs obtenues	Valeurs de références
1	PA/PV	1.2	≥1
2	LV/LT	0.6	≥2/5 soit 0.4
3	LA/LT	0.3	≤3/5 soit 0.6

Legend: PV: protein plant; PA: animal protein; LA: Fat animals; LV: Lipids plants; LT: Fat totals.

Reports: animal protein on plant protein was equal to 1.2; plant lipids on total lipids presented as a result 0.6 and animal lipids on total fat gave 0.3.

4 Discussion

The method used is that of the reminder 24 hours. This method specifies that the practitioner reports during the interview the food and beverages consumed during the previous 24 hours. The investigator asks specific questions and precise all by remaining neutral: food preparation mode, normal addition (butter, oil, sauce,...), forgotten snacking.

The practitioner reports the usual frequency of consumption on a pre-established list. The advantages of this method are the following: this is a quick way (30 minutes), no constraint of writing and no interference with feeding, for large samples. But this method has drawbacks: the investigator should be trained to estimate the sizes of the portions, to find forgotten food; he must know the foods of the region, the direct influence of the investigator, voluntary omissions of respondent and over variability of food. However many other reliable methods such as the weekly weighings, the frequency, food and other history questionnaire. The eating habits of humans subjected to training were investigated in several studies: (Kone, 1982 and 1986; Rieth and al., 1999; [9, 10, 11]. Research on eating habits by the 24-hour recall method, have allowed us to acquire the values on energy intake, balanced diet in athletes half-fondiers Brazzaville's.

4.1 Assessment of nutritional status (Table 1)

In all our subjects were normal with a percentage of 76.7%, despite a few cases of slight inwardly listed amounting up to 13.3%, and moderate inwardly amounting to 10%. This is due to the fact that these athletes only at once, especially in the evening or dinner meal. Certainly these athletes also have a very low purchasing power. They don't know the interest of breakfast and lunch. Several researchers have shown that eating breakfast improves performance (Mayer et al., 1960); Tutlle and al., 1950; Tutlle, 1951) [12, 13, 14]. If our athletes currently adapt to the legs, then feed them instead, as some researchers proposed by local food such as *Cuervea Isangiensis (De wild.) N.hallé* which is a food rich in micronutrients (Mbemba et al., 2012) [15] and macronutrients (Mbemba et al., 2013) [16].

4.2 Anthropometric data of subjects (Table 2)

In all of the variables, the average was accompanied by the standard deviation. The minimum and maximum age was 17 to 33 years and 22.22±2.15 years. These results are contrary to those found by (Mbemba et al, 2007) [17]. The coefficient of variation was 11.84 percent. There is dispersion of the values that the answer found is greater than 10. The weight minimum and maximum of 46.7 to 72.5; with an average of 55.4±5.22 kilograms per person. 9.32% variation coefficient. The minimum and maximum size was 1.50-1.88 and 1.67±0.05 cm with a coefficient of variation of 3.57. The body mass index had a minimum and maximum of 1.74-25.33 and 19.76±1.95 Kg/m2, the coefficient of variation was equal to 9.83%. There was collection of values around the mean that the coefficients are less than 10. Our results in weight, size and body mass index are lower compared to those obtained with the football players and basketball players (Mbemba et al., 2007) [17]. But the study of Mbemba and its allies which we compare the results had not taken into account the coefficient of variation.

4.3 The food balance sheet of macronutrients (Table 3)

Energy intake obtained in half-fondiers of Brazzaville Club athletes were 4252.9 Kcal or 17794.13 Kilo joules. These results are down to recognized standards universally which stipulate that an athlete following a regular training of high level, average energy expenditure in athletics (middle distance) must be equal to 5000-3800 Kcal (or 50 to 60 Kcal per Kg). These contributions are higher than those found among long-distance runners from 35 to 60 years, which amounted to 2451.9 Kcal per (Rieth et al., 1999) [11].

With respect to the distribution of the energy provided by the different nutrients, feeding of our athletes brought: carbohydrates: 3240,3 Kcal (13557.42 kilo joules) 76.19%; FAT: 542.8 Kcal (2271.07 kilo joules) is 9.37%. Protein: 469.8 Kcal (1965,64) or 11.04%. When you look at the standards for a balanced diet, one realizes that the energy provided by carbohydrate into percentage is higher than that provided by a balanced diet, i.e. hyper carbohydrate: 76.19% to 55%. These results are similar to those found at footballers: 79.51% and the basketball players: 78.24% (Mbemba et al, 2007) [17].

Our results at the half-fondiers, we notice an excess of carbohydrates (3240.3 Kcal or 76.19%). It has been defined by the Committee International Olympic (C.I.O, 2010) [18] the daily energy intake of carbs set 50 to 55% will spend in athletes or athletes from 55% to 75%. Carbohydrates are the energy food for athletes by excellence. Provided energy is hyperglucidique. In connection with the regulation, his Congolese athletes are outsized.

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Lipids presented a daily energy intake that is less important than the recommended 30% that should bring the FAT to food. Our Congolese athletes have presented 542.8 Kcal or 12.77 percent. (Menod et al., 2000) [8] are the lipid intake from 15 to 45%. Its athletes have an unbalanced fat energy intake. The amount of energy supplied by food is-that of balanced diet: 12.77% instead of 30%.

Proteins have brought 496.8 Kcal or 11.04%. The Association French Security health and Food (A.F.S.S.A) become agency national of safety health environment (ANSES) [19] recommended since 2001 athletes over 18 years of age must consume proteins ranging from 12 to 16 percent. Our athletes have an energy input unbalanced in proteins. These Congolese athletes have a right diet.

4.4 A balanced diet (Table 4)

The table 4 shows that report animal protein on plant protein must be greater than or equal to 1 according to the recommendations. It turns out that the athletes of half-fondiers this report is equal to 1.2; It is balanced. On the other hand, the animal lipids on plant lipids report gave us 0.6. In this regard, the balance is respected. The report on total fat animal fat is 0.41. The requirement according to

the standards of food balance is respected. On a balanced diet, in the Congo, there is no work to our knowledge which we can compare and discuss our results.

5 Conclusion

The objective of this study was to calculate supply macronutrients of the half-fondiers from clubs to athletics in Brazzaville during the training period and compare his food intake to the standards of the food balance of modern nutritionists. The nutritional status of the subjects of our study was normal despite some cases of inwardly. Macronutrients were outside the norm of the nutrient intakes recommended by modern nutritionists. It appeared an imbalance in the diet. The directory of the eating habits of athlete's half-fondiers of Brazzaville Athletic Clubs is rich in carbohydrates but insufficient lipids and protein. The power of these athletes is abnormal. The diet of these athletes does not meet standards of the balanced diet recommended by the modern nutritionists.

This imbalance in macronutrients is dependent on the lack of nutritional information due to the absence of nutritionists in these clubs and as well as the purchasing power of these athletes. This poses serious health problems later in the career of sport for those athletes. However, reports of food balance were recommended standards. Clubs, leaders search for sponsors, the State must also put in place a funding policy for clubs, especially athletes. Of the foregoing, an effort remains to provide to address without delay the food problem of the athletes who are the permanent quest for performance.

6 Acknowledgments

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