

BODY COMPOSITION OF PEOPLE AGED 30 TO 60 IN CONGOLESE RURAL AREAS

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Abstract

The objective of our study was to assess the body composition of the active populations of the hinterland in relation to the activity practiced. This study involved 513 subjects stratified by age and male sex, divided into three activities, namely: hunting, agriculture and fishing, subjects followed the following measures: It appears that significant differences were noted between fishermen, hunters and farmers for a similar age group. For example, fishermen aged 30-39 years showed significant superiority in weight, muscle mass, body volume and body water. Finally, the evolution of interest parameter values from 30 to 60 years was increasing for the percentage of fat mass (PCTG) and the total amount of subcutaneous fat (GSHQ). On the other hand, it was decreasing for data from other variables. Revenue-generating activities depend on physical capacity.

Keywords: *composition, body, environment, rural and Congoles*

1. Introduction

Man's life is centered on physical activity; this term in the broadest sense includes all movements made in daily life [1]. The main characteristics of a given physical activity are the intensity, duration, frequency and context in which it is performed. Intensity, on the other hand, represents in absolute or relative terms the effort required to carry out an activity; in practice, its energy cost is expressed in kcal/min [2]. Thus the various activities of man differ depending on the environment and the level of socio-economic development. In Congo, the way of life in urban areas looks sedentary compared to that of the rural area. This situation has been the subject of several studies [3,4]. An explanatory factor is the uneven distribution of the oil windfall. In this context, the daily activities of most city dwellers are characterized today by a reduced energy expenditure,

The lack of data on the body composition of active subjects in the Congolese rural world justifies this study, which aims to determine the body composition of Congolese living in rural areas, aged 30 to 60 years, according to the main activities Made.

2. Sample materials and methods

The source population consisted of farmers (GAs), fishermen (PCs) and hunters (CH). The target population consisted solely of men engaged in only one of the activities. Women were excluded from the study because of the ethnic habits and customs of the three departments on the place of

women in the household food supply [9], as well as men engaged in two or three activities at a time. The choice of villages or localities was made out of convenience, depending on the accessibility of the premises, after an administrative census of the villages meeting the above criteria. All of these villages had a population of 1575, of which 677 (43.0%) men between the ages of 30 and 60. Of these, 584 were selected to take part in the experiment. However, an oral or written agreement (depending on the literacy level of the subject) was a prerequisite. Moreover, the purpose of the study was explaining farmers, 5 days for hunters (night and day); the daily hourly average of work was 14 hours for fishermen, 12 hours for hunters and 7 hours for farmers. Fishing was carried out in rivers with water current velocity ranging from 1.5m/s to 3.0m/s, with an average depth of 50cm (flooded forest area) to 20m [10]. Agricultural areas were savannahs (growing potatoes, peanuts, yams, sweet potatoes, onions, tobacco) and forest areas in the northern Congolese basin (planting bananas, cocoa trees, coffee trees; cassava fields) [11, 12]. As far as hunting is concerned, it was practiced in savannah or forest [13].

3. Experimental Procedure

Initially, the size (T) and body mass (P) of each subject were measured. The size was determined by two investigators using a toise (CMS Weighing Equipment Ltd, England, ShoorBoard TM USA). The weight of the men, totally undressed at almost, was measured using a scale Salter England (Model 235-6S), pressing a tenth that defect; it was regularly calibrated; the scale needle being reset had a new weigh-in. Based on height and weight, the body mass index (BMI) was calculated from the ratio $[P \text{ (kg)}] / [T \text{ (m)}]^2$. Subsequently, the percentage of body fat (PCTG) was determined using the thicknesses of 4 skin folds found at the biceps, triceps, subscapular and iliac crest, in accordance with the PCTG estimation method [14]. For this, a constant pressure adipometer (caliber: 10g/mm²). The protocol for folding measurements complied with the recommendations of the Gold ...

$$VC \text{ (in L)} = (PCTG - 4.50P) / 4.95$$

In addition, the mineral quantity (Mo, in kg)

of the whole body and the amount of body water (Total Body Water, TBW, Anglo-Saxons) were also determined using the 4-compartment predictive models of Heymsfield et al [17]: Mo (in kg) = $[PCTG - 6.09P - 6,386$

$$VC) / 3,961 \text{ TBW (in kg)} = [(2.75VC - 1.48 MB) - (2.05P - PCTG)] / 0.714$$

Finally, fat lean mass (MB, in kg) was determined using the phrase: Mo (kg) = $P - (P \times PCTG / 100)$

3.1. Variables studied

The values in this study were: body mass (in kg), body mass index (BMI, in kg/m²). The percentage of fat (in), the amount of subcutaneous fat (kg), body volume (in l), the amount of body water (in kg) and the body (in kg), the mineral amount of the whole body (in kg) and the lean mass (muscle mass, in kg).

3.2. Statistical Analysis

The study data was processed by IBM SPSS Statistics 21.0 software. Averages were used for all variables in the study. The normality of the distribution of variables was verified by the Shapiro-Wilk test. The level of confidence was set at 95% and the 5% represented the level of significance of all statistical tests (p - 0.05).

Résultats

Table 1 : Numbers and percentages of subjects by age group and industry

	30-39 ans n (%)	40-49 ans n (%)	50-60 ans n (%)	Total n (%)
Agriculture	72(60,5)	28(23,5)	19(16,0)	119(23,2)
Hunt	87(47,8)	54(29,7)	41(22,5)	182(35,5)
Peach	102(48,1)	65(30,7)	45(21,2)	212(41,3)
Total	261(50,9)	147(28,7)	105(20,4)	513(100,0)

Table 2 shows the nutritional status of sinners by age group.

	30-39 ans (n=102)	40-49 ans (n=65)	50-60 ans (n= 45)	P
T(m)	1,76 ±0,13	1,76 ±0,11	1,72 ±0,15	0,056
P (kg)	71,5 ± 2,5	67,8 ± 4,2	62,3 ± 5,7	0,039
IMC (kg/m ²)	23,1 ± 0,3	21,9 ± 0,5	21,0 ± 1,2	0,048
PCTG(%)	8,7 ± 0,7	9,2 ± 1,5	13,5 ± 0,4	0,031
QGSC (kg)	20,6 ± 1,2	29,1 ± 0,7	32,9 ± 0,4	0,034
Mm (kg)	65,0 ± 1,1	61,5 ± 1,4	53,0 ± 1,1	0,027
VC(L)	65,0 ± 2,5	61,6 ± 1,9	56,7 ± 1,4	0,039
Mo (kg)	5,2 ± 0,8	4,5 ± 0,6	4,4 ± 0,3	0,049
TBW (kg)	53,3 ± 1,3	49,7 ± 0,8	46,4 ± 0,5	0,046

Abbreviations: T, size; P, body weight; BMI, body mass index; PCTG, percentage of fat; CSHQ, amount of subcutaneous fat; Mm, lean mass; VC, body volume; TBW, amount of body water and MB, mineral quantity of the whole body. Table 3 shows the nutritional status of hunters by age group Table 3: Nutritional status of hunters by age group

Table 3, represents the numbers and percentages of subjects by age group and activity factor

	30-39 ans (n=78)	40-49 ans (n=54)	50-60 ans (n= 41)	P
T(m)	1,69±1,3	1,69 ±0,7	1,68 ±0,6	0,128
P (kg)	65,8 ± 0,5	65,6± 0,7	65,2 ± 0,6	0,063
IMC (kg/m ²)	23,0 ± 0,7	23,0 ± 0,4	23,1 ± 0,3	0,057
PCTG(%)	9,5 ± 0,4	10,3± 0,6	13,8 ± 1,2	0,034
QGSC (kg)	22,4 ± 0,8	25,1 ± 0,3	26,8 ± 0,4	0,025
Mm (kg)	59,5 ± 0,2	58,8± 0,5	56,2 ± 0,1	0,046
VC(L)	59,8 ± 1,5	59,6 ± 0,7	59,3 ± 0,4	0,058
Mo (kg)	4,8 ± 0,6	4,8 ± 0,3	4,7 ± 0,2	0,052
TBW (kg)	48,9 ± 1,2	48,8 ± 0,7	48,5 ± 0,5	0,055

Abbreviations: T, size; P, body weight; BMI, body mass index; PCTG, percentage of fat; CSHQ, amount of subcutaneous fat; Mm, lean mass; VC, body volume; TBW, amount of body water and MB, mineral quantity of the whole body. Table 4, represents the nutritional status of farmers by age group

Table 4 : Nutritional status of farmers by age group

	30-39 ans (n=78)	40-49 ans (n=54)	50-60 ans (n= 41)	P
T(m)	1,71±0,8	1,70 ±0,5	1,70 ±1,3	0,086
P (kg)	66,84± 1,6	65,4± 0,8	63,1 ± 1,1	0,046
IMC (kg/m ²)	22,7 ± 0,3	22,6 ± 0,5	21,8 ± 0,7	0,047
PCTG(%)	8,1 ± 0,6	8,4± 1,3	9,1 ± 0,6	0,039
QGSC (kg)	18,1± 0,8	21,6 ± 1,4	23,0 ± 1,2	0,037
Mm (kg)	61,0 ± 0,4	59,9± 0,7	57,3 ± 0,5	0,047
VC(L)	60,4 ± 1,5	59,5 ± 1,4	57,4 ± 0,8	0,054
Mo (kg)	4,7 ± 0,6	4,6 ± 0,2	4,5 ± 0,4	0,049
TBW (kg)	51,6 ± 2,0	50,8 ± 1,3	49,1± 0,4	0,060

Abbreviations: T, size; P, body weight; BMI, body mass index; PCTG, percentage of fat; CSHQ, amount of subcutaneous fat; Mm, lean mass; VC, body volume; TBW, amount of body water and MB, mineral quantity of the whole body.

4. Discussion

With respect to fishermen, significant differences were observed between the three age groups. The differences were 14.8% for the weight in favour of 30-40 year olds (p-0.039), with the lower values being found in the 50-60 year olds (71.5 - 2.5 kg versus 62.3 - 5.7 kg). For BMI, the maximum values were recorded among 30-49 year olds (23.01 - 1.2kg/m²), the minimums for 50-60 year olds (21.0 - 1.3kg/m²), a variation of 10%. As for the PCTG, the difference of 55.2%, with higher values being noted among 50-60 year olds (p-0.048). The trend was found in the amount of subcutaneous fat : 32.9 - 0.4kg for 50-60 year olds versus 20.6 - 1.2kg for 30-39 year olds, a difference of 58.7% (58.7% (0.034). On the other hand, fishermen aged 30-39 years differed from 50-60 year olds by a decrease in values : muscle mass, up 21.2% (p-0.027) ; body volume, up 14.6% (p-0.039) ; Mineral quantity of the whole body, up 18.1% (p-0.049) ; amount of body water, up 14.9% (p-0.046). This is because aging, which is one of the resounding factors of mass reduction, the more one becomes older, the more body mass must necessarily decrease and efforts must be regressed, in other words the effort is dependent age. These results are corollary to those [19].

In terms of the nutritional status of hunters, the only significant differences were noted in the level of PCTG (up 45.3% in favour of 50-60 year olds, p-0.034), the overall amount of subcutaneous fat (up 19.6% for 50-60 year olds; p-0.025), muscle mass (up 5.9% found in 30-30 year olds; p-0.046). At the farmer level, the higher values found among 30-39 year olds were weight (up 5.2% ; p-0.046), muscle mass (up 6.5% ; p-0.043), and body volume (up 5.2% ; p-0.047). The oldest farmers (50-60 years old) were distinguished by the maximum favours of the PCT (up 12.3% ; p-0.039), the amount of fat undercut (27.1% ; p-0.037). As for the other interest variables, no significant differences were found (IMC, Mo, TBW). In addition, significant differences were noted between fishermen, hunters and farmers for a similar age group. For example, among fishermen aged 30-39, there was a ... For 40-49 year olds, statistically higher values were recorded at the CHQ level among fishermen [34.7%(/AG) and 15.9%(/CH)]. For those aged 50-60, the maximum values were rated AT THE PCTG level (up 50.1% for fishermen compared to 45.3% for hunters and 12.3% for farmers. The trend was similar for Hq: 59.7% (PC), 27.1% (AG) and 19.6% (CH). Finally, the

evolution of the interest parameters values of 30 to 60 years was increasing for the PCTG and the HQ. On the other hand, it was decreasing for data from other variables. The results suggest that these populations are immune to certain noncommunicable diseases such as diabetes and obesity, due to their intense activity. These results are similar to Grappe's work in cyclists [20].

5. Conclusion

Income-producing activities depend on physical abilities and are linked to basic feeding, as the fisherman's morphotype exceeds that of farmers and hunters. It is possible for the fisherman to turn into a farmer or hunter, but the opposite is not possible because of the environment and the energetic expenditure generated by it. These activities help to better manage aging and avoid cardiovascular and coronary heart disease.

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