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Comparison of Some Physical Qualities of two Teams of League Departmental of Basketball of Brazzaville (Congo)

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Abstract: *With an aim of examining two teams of the departmental league on few physical qualities of the Basketball players, three groups of ten (10) basketball players evolving/moving in two clubs of the departmental league of basketball of Brazzaville (Inter club and Devil Black), Thirty basketball players were in two groups of fifteen (15) subjects subjected to a drive. These subjects underwent an evaluation in various tests whose ultimate concern of the actors is the research of the most thorough performance. This performance results from the symbiosis and the optimization of the factors of performance of a nature physical, technical, tactical and psychological. Thus, the preparation of the basketball players must take into account all these dimensions of the performance. These factors of performance are complementary, the progression of the one of them supports that of the others and the regression of the one could also involve the fall of the others.*

Key words: *physical qualities, EPS, Drive, Tests, performance, Basketball.*

I. Introduction

relaxation and a good templates. It is for all these reasons referred to above, than we propose to study and compare physical qualities, the body composition and the cardiovascular parameters of two teams of the departmental league of basketball of Brazzaville which regularly provide players to our male national team whose performances have not ceased dropping for two decades. The studies showed that the basketball is a sport par excellence of co-operation and of opposition makes starting from the attack and defense whose finality in the high sporting medium is the improvement of the performance, this report/ratio of force of the two teams, proceeds on a ground of 28 m out of 15 m, The sport became a social phenomenon of great width. The practise become more than front. Some of them carry on sports activities for their good physical being while others, seek the performance for the financial profits. This is why, in all the sporting disciplines, the organization is requested regularly. This fact all contributes today to the establishment of programs of adequate drives. Thus the sport, especially high level cannot do without the contribution of biological sciences such as social physiology, biomechanics and sciences (psychology, sociology).

The Basketball shoe is an on a worldwide scale practised sporting discipline. The major concern of the actors is the research of the most thorough performance. This performance results from the symbiosis and the optimization of the factors of performance of a nature physical, technical, tactical and psychological. Thus, the preparation of the basketball players must take into account all these dimensions of the performance. In addition to the conquest of the balloon under the panels in phase of attack and phase of defense, requires a good during a time defined in advance [1; 2]. Exist there a synergy in the application of dimensions of the performance likely to make the performance sporting higher on the level of our teams. Notwithstanding, realism that will bring the improvement of physical qualities, the choice of a good body composition and cardiovascular parameter on our sportsmen, the preparation of our athletes must take into account all dimensions of performance [3]. Of consideration by what precedes, our study consists in studying and to compare physical qualities (vertical relaxation, maximum consumption of oxygen, reaction speed), the cardiovascular parameters (NOT; PAD; FCR)

and parameters of the body composition (% of grease; MG; MSG) and we were interested in biometric measurements.

2. Material and methods

The study related to three groups of ten basketball players evolving/moving in two clubs of the departmental league of basketball of Brazzaville (Inter club and Devil Black); the criteria of inclusion in our study were the basketball players being part of the titular players, regularly aligned at the time of the championship of Brazzaville and the cut of the city put in competition during the season; the criteria of exclusion of our study were the no titular players, the irregular players with the training sessions and the players who did not follow the preparation.

Anthropometric measurements of the basketball players of three (3) groups were controlled at the beginning and the end of cycles. The explanatory variables were: the age, size, the weight. The size and the weight were used for calculation of the index of body mass (IMC) to also appreciate the nutritional state of the basketball player's Congolese. The aptitude for summer evaluated through the various tests hereafter:

- Test of vertical relaxation (Sargent test)
- Test reaction speed on 20 meters
- Test of evaluation of VO2max [4].

The data obtained during biometric measurements and of the administration of the aptitude tests were treated by means of the descriptive statistics by the use of the Excel software which consisted in calculating the average (X) and standard deviation (SD). The averages inter groups were compared using the test of Student while the pre averages and post tests as for them were compared thanks to the test of variance analysis (ANOVA). However, before carrying out this test, we checked the equality of the variances of each parameter by the test of Bartlet which in the probability of error is fixed $\alpha = 1\%$.

3. Results

Anthropometric characteristics of the basketball players

The age, the weight and the size of the basketball players subjected to the drive according to teams' were presented in 1 table in the form of average standard deviation.

Tableau.1: Age, weight, size of the basketball players subjected to the drive with the practical tests of the two teams in the form of averages more or less standard deviation

Caractéristiques	INTER (n=15)	D.N.B.B (n=15)	T	P	Seuil
Age (ans)	26,20±5,76	25,70± 4,86	0,22	NS	P <1%
Poids (kg)	76,00 ±25,48	61,20 ±9,15	1,06	NS	P<1%
Taille (cm)	190 30 ±8,31	188,30 ±6,90	0,71	NS	P<1%

NS: no significant difference

The values of age, size and the weight of the basketball players of the two clubs were statistically identical

Physical qualities of the two teams

The tableau.2 presents in the form of average standard deviation more or less (), the physical parameters; the VO ^{2} max in (ml.kg-1, mn-1); the speed of reaction (VR) in second, and Sargent test in centimetre.

Table 2: averages more or less standard deviation of physical qualities of two clubs subjected to the physical activities (the maximum consumption of oxygen VO ^{2} max; the reaction speed on twenty meters; Sargent test of two teams).

	INTER (n=15)	D.N.B.B (n=15)	T	P	Seuil
VO^{2}max	60.15± 3. O7	54.1± 4.12	3.82	S***	P<0. 001
VR sur 20 mètres	51.77 ±0.16	50.55 ±0.33	0.04	NS	P<1%
Sargent test (cm)	58.80 ±7.78	56.30 ±9.13	0.80	NS	P<1%

NS: no significant difference

***: highly significant difference (P< 0. 001)

The results obtained made it possible to show that there no was significant difference between the values the reaction speed and Sargent test. However compared to the other parameters quoted under top the maximum consumption of oxygen (VO2max) at summer significantly higher (60. 15 3.07±3.07 against 5.41 4.12 ml.kg $^{-1}$ mn $^{-1}$ compared to that of their counterpart. These results were also revealing of an improvement much more significant in the basketball players of INTER during their drive.

Table 3 presents in the form of average standard deviation more or less –the physiological parameters (cardiovascular), the heart rate of rest; systolic blood pressure and diastolic blood pressure of the two teams

Tableau.3: Physiological values; NOT; PAD; FCR in the average form more or less standard deviation of two teams of the departmental league of Brazzaville

	INTER	D.N.B.B	T	P	Seuil
FCR (bat/min)	66.80±7.36	72.90 ±10.69	1.82	NS	P<1%
PAS (mmHg)	113.50± 8.83	109.7 ±7.76	0.01	NS	P<1%
PAD (mmHg)	74.40 ±5.90	70.60± 4.90	1.92	NS	P<1%

NS: no significant difference

The results obtained made it possible to show that there no was significant difference between the physiological values of the subjects of two clubs of the league basketball of Brazzaville.

The tableau.4: present in the form of averages standard deviation –more or less the percentages of grease, the fatty mass in kilograms and the thin mass in kilograms, the two teams of the departmental league of Brazzaville.

Table 4: parameters of the body composition, % of the mass lubricates in kg and the mass more or less lubricates in kg in the average form standard deviation of two teams of the departmental league of Brazzaville

	INTER (n=15)	D.N.B.B (n=15)	T	P	Seuil
FCR (bat/min)	66.80±7.36	72.90 ±10.69	1.82	NS	P<1%
PAS (mmHg)	113.50± 8.83	109.7 ±7.76	0.01	NS	P<1%
PAD (mmHg)	74.40 ±5.90	70.60± 4.90	1.92	NS	P<1%

NS: no significant difference

The reading of table 4 reveals no significativity of the body composition the results of the test show that there is not any difference of the statistically significant average between the two teams with the value (P< 1%).

4. Discussion

The present study was undertaken with an aim of examining the comparison of some physical qualities of two teams of the departmental league of basketball on certain physical qualities and certain parameters of the body composition of the two clubs. At the beginning of this study, we formulated the assumption that the comparison of some physical qualities, obeying the transversality supports the development certain parameters physical.

The physical capacity is closely related to the morphological state of the basketball player [5] the anthropometric characteristics showed that the subjects of two teams present ages, sizes and the weights and the identical parameters of the body mass. This no significant difference of the age can be justified by the agreement of the years of birth and staturo-ponderal growth. The staturo-ponderal growth is dependent on the social environment of the basketball players dependently of the similar economic profile of the parents. The socio-economic profile largely influences the food and especially the ponderal growth staturo [6], the identical staturo- ponderal growth of the two teams is perceptible through the body mass which are identical from the statistical point of view, the mass of our subjects results from the combination of the musculo-skeletal structures necessary to the practice of the physical and sporting activities [6].

However the average ages of the two studied Brazzaville population teams (26.20±5.7 years against 25.70±4.86 years, table I), are comparable with the average age (25.28 years) of the team CHORAL SOCIETY ROANNEBASKET, championed of France during season 2006-2007 [7]. What shows that the players evolving/moving in these two clubs have an age which can support the physical constraints of the competition. Indeed, [8] reported that the players evolving/moving in the high level give up around thirty years. However exceptions are noted in the American professional championship where stars prolong their careers until 35 years. The players of big sizes recover the maximum of ball thus giving their team in offensive phase. Then in all the attempts at shooting, the smallest player is obliged to modify the trajectory screw-a-screw large whereas the large one screw- a - screw small is not embarrassed too much. The average of size in the National championship of France 1 masculine is 1.93 meter [7]. Panathinaikos (Greece) national champion 2006 and Champion of Europe in 2007 with an average of size of 1.98 meters [9]. These European averages are comparable with the average sizes of Inter club (190.30±8.31m) et de D.N.B.B (188.30±6.90 m) However there is not any

significant difference (p>l %) in sizes between these two studied clubs. The weight can be determining at the time of the battles under the panel for recovery of the balloon (rebounds, blockings) but it can be a factor limiting as for displacements and the speed of execution (DVE). The average weight of the French Olympic selection at the time of the plays of Montreal 1977 is 86 kg [9] slightly higher than those of Inter club (76.00±5.48 kg) and of DNBB (81.20±9.15 kg). However the variance analysis did not reveal of significant difference between the two clubs (p > l %).

The maximum consumption of oxygen is a criterion of evaluation of the endurance of the basketball players. For [9], a high level player in competition must have a vo $_2$ max equalizes with 60.15±3.07 ml.kg $^{-1}$ mn $^{-1}$ So not, its organization will have resorts to the anaerobic processes and the concentration of high acid lactic makes the medium intramuscular more acid, which induces tiredness, from where a deterioration of the precision and address. It is often the case of the males teams involved at the time of second half of a meeting.

The maximum consumption of oxygen average of D.N.B.B (54.1 ± 4.12ml.kg $^{-1}$ mn $^{-1}$ is lower than the value recommended in a basketball player in competition (60 ml.kg $^{-1}$ mn $^{-1}$.

However the value of team D.N.B.B is lower than those of the cross-country skiers (80 ml.kg $^{-1}$ Mn $^{-1}$ but comparable with those of the basketball players of Swedish elite (50 with 70ml.kg $^{-1}$ mn $^{-1}$ and higher than that (40ml.kg $^{-1}$ mn $^{-1}$ of sedentary adults of the same age [9].

This comparison let's see that team D.N.B.B must still improve the VO $_2$ max of her basketball players to try to bring it closer 60 ml.kg $^{-1}$ mn $^{-1}$ Inter club whose maximum consumption of oxygen (60.15 ml.kg $^{-1}$ mn $^{-1}$ is statistically higher (p<l%) than that of club D.N.B.B and comparable with the value desired in the high level basketball player (60ml.kg $^{-1}$ mn $^{-1}$ will be able to maintain this value by periodic meetings and to center the remainder of the time of drive on the other factors of performances. In the sport it is not a question only of the acceleration of the movement and time necessary to the total achievement of the gesture, but also to react as quickly as possible to precede the adversary [8]. To run very quickly on a short distance, to block, change direction, to jump are repeated actions at least about fifty times by the player in the ground. To carry out much more these actions which the adversary trains the players to exceed the latter. From where importance the reaction speed which makes it possible to a player to take lead on the other. We did not find in the literature of the studies carried out on the reaction speed in basketball players. And we did not note any significant difference in reaction speed average between the two studied clubs (Table 2). To make jump these players higher is the dream of any trainer of basketball. And to jump higher than everyone is the gesture than would like to make any basketball player. However we have changing no value of vertical relaxation published in the literature concerning of the basketball players, even if this physical quality can make the difference between two teams at the time of a meeting. Concerning our three teams, we did not note a difference in significant average between them (p>l %) (Table 2).

The heart rate of rest is a criterion of evaluation of the level of drive of the sportsmen and particularly of the high level sportsmen practising of the disciplines of endurance. The more the sportsman is trained in endurance, plus his heart rate of rest is low [10]. This is why marathonians, skiers basic, the cyclists and the triathloniens have heart rates of rest neighbors of 30 battements/minute. This deceleration of the rate of heartbeat of rest is the result of a reinforcement of the vagus cardio moderating [10].

The value of the heart rate of rest is a reference mark of appreciation of the capacities of recovery of a sportsman after a physical effort. The heart rates of rest averages of Inter club and D.N.B.B are respectively (66.80 ± 7.36 and 72.90 ± 10.69 battements/minute). Of course the basketball players do not run the hours and the hours on the tracks like the athletes quoted above. But their heart rate of rest should be largely lower than that of a of the same adult sedentary age (70 with 80 battements/minute). This shows that the basketball players of the two studied clubs should accentuate their drive of endurance.

The systolic blood pressure is the pressure exerted by blood on the wall of the arteries at the time of the ventricular systole. The increase in the pressure will intra ventricular at the time of the volumetric I so contraction, involves the opening of the semilunar valvules followed by the ejection of blood in the aorta and the pulmonary artery [10]. According to these authors, the systolic pressure of an adult subject centre at rest during 15 minutes is between 110 et140 mmhg. The values (109, 112, 113 mmHg) of the two studied teams are comparable on the terminal inferior of the interval (110 mmHg) given by [10].

The diastolic blood pressure is the pressure exerted by blood on the wall of the arteries at the time of the ventricular diastole i.e. the moment or the ventricles are slackened in order to fill [10]. Its value is between 60 and 80 mmHg in an adult at

rest during 15 mn. The average values of our two clubs are well in this interval (table 2).
The percentage of grease is estimated starting from the body density (d) which definite like:

D (kg/m^3) = M/V

M = body mass (kg) V = Volume body (m^3)
Obtaining the percentage of grease makes it possible to evaluate the weight of the fatty mass of a subject [11]. The percentages of average greases (14.35%, 12.83%, 14.30%) of our two teams are lower than the percentage of grease (15%) of the man of reference [10]. However the average weight of the fatty mass (10.5kg) of the man of reference is comparable with those of our two teams (12. 05±3.44kg and 11.19±3.89kg). This comparison with the man of reference shows that our subjects do not present a surplus of grease which could constitute a limiting factor of the performance. The comparison of the averages of the two teams did not reveal any statistically significant difference even if D.N.B.B presents absolute values of percentage of grease and fatty mass lower than those of Inter club (Table 4). The thin mass is equal to the decreased weight of the fatty mass [12]. It is consisted of water, the muscles, the bones and all the other components of the body which is not grease. It is the mass consuming energy, therefore hard-working. The improvement of the thin mass is often required in the basketball player's bus determining in balance and the opposition to the adversary on the ground and in the airs. However the part of the explored literature did not provide us values of thin mass reported in basketball players. The average values of our two clubs (71.74±7.02 kg against 69.57±7.64 kg) are higher than that of the man of reference (61.8kg) reported by [12] and there is not any difference in average of statistically significant thin mass between the two clubs.
However the part of the explored literature did not provide us values of thin mass reported in the basketball players.

5. Conclusion

The objective of our research task was to study and compare physical qualities (vertical relaxation, maximum consumption of oxygen, reaction speed), the cardiovascular parameters (heart rate at rest, systolic blood pressure and diastolic) and the parameters of the body composition (percentage of grease, masses fatty, thin mass) of the two clubs (Inter club and D.N.B.B) of basketball of Congo. We evaluated the parameters quoted above in the basketball players of the two teams and compared we them between them and with the values brought back in the literature. The age, the size and the weight of the two studied teams are comparable with those of better European teams. The maximum consumption of oxygen wished in a high level basketball player (60.15±3.07ml.kg $^{-1}$ mn $^{-1}$ is higher than that of D.N.B.B (54.1±4; 12 ml.kg $^{-1}$ mn $^{-1}$ and equalizes with that d-INTER CLUB (60 ml.kg $^{-1}$ mn $^{-1}$. The percentages of grease and the weight of the fatty mass of the two teams are comparable with those of the man of reference. While their average thin masses are higher than those of the man of reference.
However except for the maximum consumption of oxygen which is significantly higher at the team of INTER CLUB, there is not any difference in average between the two teams. It comes out from this study that the basketball players of INTER CLUB and D.N.B.B present heart rates of rest high and maximum low fuel consumption of oxygens for high level basketball players. It would be interesting to widen this study with the other clubs of tennis shoe of the first division of Brazzaville for an improvement of the programs of drive and the rise in the level of the players who will be selected in the national team.

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