



A Cross-Sectional Study of the Cameroonian Elite Basketball Players towards their Physical Activity Attitudes Due to the Covid-19 Pandemic

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Abstract

Introduction: The coronavirus pandemic (COVID-19) led to adaptations in all sectors of activity. The study aimed to assess physical activity attitudes of Cameroonian elite basketball players due to COVID-19 pandemic.

Methods: A total of 86 basketball players completed a questionnaire to collect anthropometric parameters before and after relaxation, physical activity maintenance, number and type of training sessions, and opinion on physical capacities during and after confinement.

Results: 72.8% of the participants experienced weight status variation. The majority (81.5%) continued training during the confinement, 77.3% trained at home and alone (80.3%), 55.3% increased training sessions alone, 84.9% reduced group training sessions and 97.4% reduced training sessions with coach. About 61.8% preferred physical training, and 82.4% muscle strengthening exercises instead of aerobic exercise (10.3%). About 60.5% maintained strength, lost speed (60.5%), and endurance (74.1%). After the first training session, coach qualified the physical capacities as average (55.6%).

Conclusion: COVID-19 impacted physical activity attitudes. Measures should be developed to reduce the impact of confinement in return to sport.

Keywords: COVID-19; Physical Activity Attitudes; Elite Basketball Players; Cameroon

Introduction

The whole world has known since the end of 2019 a pernicious health crisis caused by a respiratory disease called COVID-19 (coronavirus disease). It started in Asia, specifically in the People's Republic of China in the city of Wuhan, and quickly spread across the country and then around the world [1]. The World Health Organization (WHO) classified this disease as a pandemic on March 11, 2020 [2-6]. In addition, WHO has proposed preventive measures to reduce the risk of infection, including social distancing, isolation [2,7], and the closure of business activities. These measures were mainly aimed at avoiding social gatherings [7].

Governments have also imposed restrictions on outdoor activities and even quarantine of the population in an effort to contain the outbreak [8]. For instance, the Italian Government banned the great majority of collective and social activities [8] and in Bangladesh, the Government closed all educational institutions and both public and private offices on 16 March 2020 [9].

The world of sport is no exception. Several major sporting events have either been postponed or simply canceled and any training or organized practice has also been banned [10-12]. This is for example the case of the Summer Olympics Games, the UEFA European Football Championship which have been systematically suspended [7,13]. In addition, group training in sports clubs has also been banned, forcing athletes as well as coaches and managers to adopt new sports and managerial approaches [6].

Due to the potential risks associated with physical inactivity, namely a decrease in performance [14,15], and a resurgence of cardiovascular diseases mainly linked to an unhealthy lifestyle and anxiety [8,16], elite athletes have been forced to train at home [17], alone and for the majority without follow-up. However, although physical activity is defined as mandatory for the prevention of cardiovascular disease, the guidelines do not contain indications for physical activity at home [18].

In light of the literature, little research has been conducted to assess the impact of the COVID-19 pandemic on sport, while the sports field has been strongly affected. Studies have focused more on providing either practical recommendations for resuming contamination-free physical activity [6,19], or strategies and solutions for athletes in isolation [13,20,21]. However, a study carried out in South Africa found that COVID-19 had physical, nutritional and psychological consequences that could impact the healthy return to sport and the general health of athletes [22].

In Cameroon, the measures decreed by the WHO were also respected, but confinement was not total. In the sport domain, the African Nations Championship scheduled to be held from April 04 to April 25, 2020 has been postponed and the sports competitions organized by the various federations have been suspended. This was the case for the Cameroonian Basketball Federation which interrupted all its activities, thus forcing the players to adopt new sports habits. In another side, despite a great number of scientific articles related to COVID-19 and its impact on the life of populations, we have not found a study carried out on the impact of this pandemic on Cameroonian athletes in general, and on elite basketball players in particular. As a result, the objective of this pilot study is to assess the physical activity attitudes of Cameroonian elite basketball players due to COVID-19 pandemic.

Methods

This cross-sectional study was carried out in the period from June 29, 2020 (resumption of normal professional and academic activities) to July 30, 2020, in the city of Yaounde (Cameroon). It was approved by the directorate in charge of studies of the National Institute of Youth and Sports of Yaounde.

The survey was carried out among basketball players, based on a questionnaire adapted from validated questionnaire on maintenance activity [23]. Information collected included anthropometric parameters (height, weight, body mass index), maintenance of physical activity, number of training sessions, type of training session, and opinion on physical capacities.

Using a convenience non-probability sampling method, 86 basketball players were recruited after signing an informed consent form. Due to the relaxation of the barrier measures enacted by the government of the Republic of Cameroon on the one hand, and the provision by the administration of the Cameroon Basketball Federation of the telephone file of players from the different teams from the city of Yaounde on the other hand, these athletes were approached by the principal investigator. Elite sportsmen affiliated with Cameroon Basketball Federation, over 18 years old and residing in the city of Yaounde were included in the study. All participants were informed of the experimental procedures which conformed to the ethical standards of the Declaration of Helsinki revised in 1989, before giving their written consent to join the study.

The anthropometric parameters were determined in compliance with the barrier measures decreed by the government and health authorities (social distancing,

wearing a mask, regular hand washing and use of hydro-alcoholic gel). The weight was measured from a TANITA BC 532 brand electronic scale (Tokyo, Japan) placed on a hard and flat surface, calibrated before measurement, while the weight before introduction of barrier measures was estimated and reported by the player himself. The athlete's height was measured using a Seca brand measuring rod (Hamburg, Germany). The body mass index (BMI) was calculated by dividing the weight (in kilograms) by the square of the height (in meters squared).

The administration of the questionnaire took place during the meeting with the athlete who was answered directly. This self-administered instrument included the maintenance of physical activities, the number of training sessions per week (alone, in a group, and/or in the presence of the trainer), the measures taken to compensate for the lack of training in group, the type of training session (physical and / or technical), the player's personal opinion on their physical

capacities (decrease, maintenance or improvement), and the qualification of the physical capacities of the players by the coach (poor, medium, good).

Statistics

Quantitative variables are presented as mean \pm standard deviation (SD) while qualitative variables are presented as frequencies and percentages. The quantitative variables were compared between men and women using the Mann-Whitney test and the qualitative variables using the Pearson Chi-square goodness of fit test. The differences were considered significant for $p < .05$. All analysis were performed using SPSS 20 software.

Results

Table 1 presents the socio-demographic and anthropometric characteristics of the participants as well as the variation in the BMI.

(N=30)		Female (N=51)	Male (N=81)	Total	P-value
Age	M \pm SD	22 \pm 4	22 \pm 5	22 \pm 5	0.61
Age (Years)	< 20	13 (43.3)	13 (25.5)	26 (32.1)	0.037
	20 – 30	17 (56.7)	30 (58.8)	47 (58.0)	
	\geq 30	0	8 (15.7)	8 (9.9)	
Weight before	M \pm SD	67.8 \pm 7.8	81.1 \pm 10.4	76.2 \pm 11.4	< .0001
Weight after	M \pm SD	70.4 \pm 8.0	83.0 \pm 12.0	78.3 \pm 12.0	< .0001
\neq Weight	M \pm SD	2.60 \pm 1.98	1.88 \pm 3.34	2.15 \pm 2.90	0.324
Δ Weight	drop	1 (3.3)	10 (19.6)	11 (13.6)	0.026
	equal	2 (6.7)	9 (17.6)	11 (13.6)	
	increase	27 (90.0)	32 (62.7)	59 (72.8)	
BMI before	M \pm SD	22.0 \pm 2.0	23.0 \pm 2.9	22.6 \pm 2.6	0.12
BMI after	M \pm SD	22.8 \pm 2.1	23.5 \pm 3.2	23.3 \pm 2.9	0.437
\neq BMI	M \pm SD	0.85 \pm 0.64	0.53 \pm 0.99	0.65 \pm 0.88	0.104
Δ BMI	drop	1 (3.3)	10 (19.6)	11 (13.6)	0.026
	equal	2 (6.7)	9 (17.6)	11 (13.6)	
	increase	27 (90.0)	32 (62.7)	59 (72.8)	

M \pm SD: mean \pm Standard Deviation; BMI: Body Mass Index; \neq : Difference; Δ : Variation.

Table 1: Characteristics of participants.

The average age of the participants is 22 \pm 5 years without any difference between men and women ($p = .610$). Between the introduction of semi-confinement and the relaxation

of confinement measures, nearly 2/3 of the participants (72.8%) experienced a variation in their weight status, with a significant difference between men and women ($p = .026$).

Maintaining physical activity during the period of semi-confinement is reported in Table 2. Out of a total of 81 athletes, the majority (81.5%) continued training during

the period of restriction, 77.3% of them did their training at home and 80.3% did it alone.

Parameters	Female	Male	Total	P-value
Did you continue training during the semi-confinement period ?	n=30	n=51	n=81	
Yes (%)	73.3	84.3	80.2	0.363
No (%)	26.7	15.7	19.8	
If yes, where did the training take place ?	n=23	n=43	n=66(81.5%)	
House (alone) (%)	78.3	76.7	77.3	0.866
Training ground (collective) (%)	21.7	23.3	22.7	
With whom did you train ?	n=23	n=43	n=66	
Alone (%)	69.6	86	80.3	0.258
With teammates (%)	17.4	9.3	12.1	
With coach (%)	13	4.7	7.6	

n: frequency; %: percentage.

Table 2: Participants' responses on maintaining physical activity.

Regarding the number of training sessions, more than half of the players (55.3%) increased their number of training sessions alone, 84.9% reduced the number of group

sessions and 97.4% reduced the number of training sessions in the presence of the coach. No significant difference was observed by gender (Table 3).

Parameters	Female	Male	Total	P-value
Variation of training sessions alone	n=27	n=49	n=76	
Equal	22.2	20.4	21.1	0.733
Decrease (%)	18.5	26.5	23.7	
Increase (%)	59.3	53.1	55.3	
Variation of training session collective	n=24	n=49	n=73	
Equal (%)	4.2	6.1	5.5	0.905
Decrease (%)	87.5	83.7	84.9	
Increase (%)	8.3	10.2	9.6	
Variation of training session with coach	n=30	n=48	n=78	
Equal (%)	0	4.2	2.6	0.692
Decrease (%)	100	95.8	97.4	
Increase (%)	0	0	0	

n: frequency; %: percentage.

Table 3: Participants' responses on the number of training sessions.

In terms of measures taken to alleviate the lack of group training, only 35.8% of basketball players maintained physical contact with the coach at least once a week (34.6%). For about 3/4 of these participants (75.3%), personalized

training programs were developed. For 66.7% of participants, specific methods were adopted, mostly videos of sessions transmitted via WhatsApp (64.1%) (Table 4).

Parameters	Female	Male	Total	P-value
Were you in constant contact with the coach ?	n=30	n=51	n=81	
Yes (%)	26.7	41.2	35.8	0.131
At least once a day (%)	13.3	5.9	8.6	
At least once every two days (%)	10	17.6	14.8	
At least once a week (%)	36.7	33.3	34.6	
At least once every two weeks (%)	13.3	2	6.2	
Did you have personalized training programs during the semi-confinement period ?	n=30	n=51	n=81	
Yes (%)	76.7	74.5	75.3	0.961
No (%)	23.3	25.5	24.7	
Have any measures been taken to compensate for the lack of group training ?	n=30	n=51	n=81	
Yes (%)	70	64.7	66.7	0.807
No (%)	30	35.3	33.3	
If yes, what ?	n=30	n=51	n=81	
Vidéos whatsapp (%)	25.9	38.2	64.1	0.715
Aucune (%)	11.1	24.6	35.8	

n: frequency; %: percentage.

Table 4: Participants' responses on the relationship with the coach.

More than half of basketball players (61.8%) preferred physical training. Additionally, out of a total of 68 participants, 82.4% used muscle strengthening exercises at the expense of

aerobic exercise (10.3%). These trends are identical in both sexes (Table 5).

Parameters	Female	Male	Total	P-value
What type of training did you prefer ?	n=24	n=44	n=68	
Physical (%)	62.5	61.4	61.8	0.634
Technical (%)	25	18.2	20.6	
Both (technical and physical) (%)	12.5	20.5	17.6	
What type of exercise did you work out ?	n=24	n=44	n=68	
Muscle reinforcement (%)	87.5	79.5	82.4	0.221
Aerobic (%)	12.5	9.1	10.3	
Both (muscle reinforcement and aerobic) (%)	0	11.4	7.4	

n: frequency; %: percentage.

Table 5: Participants' responses on type of training sessions.

Regarding how players feel about their own physical abilities, more than half (60.5%) did not think they had lost strength, but thought they had lost speed abilities instead (60.5%), and endurance (74.1%). No difference was

observed in the two sexes. At the end of the first training session, for more than half of the participants (55.6%), the coach qualified the physical capacities of the players as being average (Table 6).

Parameters	Female	Male	Total	P-value
Do you think the semi-confinement period resulted in a decrease in your strength capacities ?	n=30	n=51	n=81	
Yes (%)	40	39.2	39.5	0.868
No (%)	60	60.8	60.5	
Do you think the semi-confinement period resulted in a decrease in your speed capacities?	n=30	n=51	n=81	
Yes (%)	66.7	56.9	60.5	0.525
No (%)	33.3	43.1	39.5	
Do you think the semi-confinement period resulted in a decrease in your endurance capacities?	n=30	n=51	n=81	
Yes (%)	66.7	78.4	74.1	0.366
No (%)	33.3	21.6	25.9	
What did the coach say about your physical capacities at the end of the first session in his presence ?	n=13	n=23	n=36	
Bad (%)	15.4	30.4	25	0.447
Average (%)	69.2	47.8	55.6	
Good (%)	15.4	21.7	19.4	

n: frequency; %: percentage

Table 6: Participants' responses on the assessment of their physical capacities and opinion of the coach on the capacities of athletes.

Discussion

The present work is among the first studies carried out in Cameroon in the sport milieu and more specifically among basketball players. It may be because the restrictions prescribed to limit the spread of COVID-19 that there has been an increase in the number of training sessions alone. On the other hand, a decrease in the number of collective training sessions and that in the presence of coach has been observed. In addition, the players favored sessions with physical dominance because they felt that semi-confinement could lead to a drop in their physical performance. However, despite this training on maintaining physical condition, the coach rated the players' physical performance as average after the first training session in his presence.

Regarding BMI, more than half of the participants (72.8%) had an increase in their weight status, with a significant difference between males and females ($p=0.026$) (Table 1). This finding suggests that both men and women experienced an increase in weight between the introduction of restriction measures and the relaxation of them. Normally, the preventive measures taken to limit the spread of COVID-19 have impacted a range of work and social activities, including sports activities [6]. Indeed, Pinto, et al. [2] asserted that the barrier measures adopted by governments, namely social isolation, have contributed to a decrease in physical activity

supported by sedentary behavior. The increase in sedentary behaviors may have caused this increase in BMI and exposed athletes to the development of cardiovascular disease [3]. Likewise, a reduction in activity leads to a decrease in energy expenditure, which consequently requires a decrease in accumulated energy to prevent an unwanted gain in fat mass [13]. On the other hand, it is likely that a prolonged stay at home could lead to an increase in sedentary behaviors, such as spending enough time sitting while playing video games and watching television, or using mobile devices, which reduces regular physical activity [19]. Yet in this study, a large number of participants continued to train alone, with a teammate or with the coach. The reported increase in weight for the population could not only be explained by inactivity, but perhaps by insufficient activity and the absence of the stresses often caused by matches.

The majority of participants (80.2%) continued training during the restriction period (Table 2). This result is in line with that obtained by Pillay, et al. [22] in South African athletes. In fact, these authors reported that over half of athletes trained at moderate intensity of exercise lasting 30-60 minutes per day. Jiménez-Pavon, et al. [24] asserted that the changes in quality of life and behavior observed in some cases as a result of the restrictions incorporate a certain level of physical activity and exercise to maintain an adequate level of health. Compared to gender, no difference was recorded

between the female and male sexes on the continuation of training ($p=.363$). This observation is contrary to that of Pillay, et al. [22] who showed that more men than women exercise daily.

In the total of participants who continued training, more than $\frac{3}{4}$ of basketball players trained alone and at home. In South African athletes, Pillay, et al. [22] showed that $\frac{2}{3}$ of athletes trained alone. However, there is a risk of training alone [15], due to the possible development of trauma [25].

The present study showed that the number of training sessions performed alone increased by more than half (55.3%), while there was a decrease in the number of group sessions (84.9%) and almost cancellation of the number of sessions with a trainer (97.4%) between the period before the restrictions and that during the restrictions (Table 3). This observation reinforces the observation that basketball players continued to train alone and at home. This assumes that the basketball players have complied with the recommendations of the Cameroonian Government, sport and health authorities which consisted in limiting gatherings of more than 50 people (match) and in prohibiting group training. It is in this sense that Hughes, et al. [6] revealed that group training has been banned in sports clubs, thereby forcing athletes, coaches and leaders to adopt new sports and managerial approaches.

We noted during our study that only 35.8% of basketball players remained in constant physical contact with the coach. The organizational consequences of the quarantine / isolation are the lack of organization of training and competitions, the lack of communication between athletes and coaches, the inability to move around freely (moving certificate to complete and sign, then almonds to pay in case of fault) and inappropriate training conditions, forcing players to reduce their physical activities and stay at home [13,16,19,26]. The decrease in personal contacts has forced coaches to develop personalized training programs for athletes. Thus, 75.3% of basketball players in this study had personalized training programs (Table 4). During the confinement period, Jukic, et al. [13] already strongly recommended providing appropriate support and advice to athletes by experts (coaches, physical trainers, nutritionists, doctors, psychologists) using technological supports (video calls, e-mail, telephone, text messages). This is what was observed in the present study with more than half of gamers (64.1%) who received their training programs via videos via Whats App.

Almost half of the participants (61.8%) preferred physical training during the restriction period (Table 5). This result seems normal to us as, being for the most part obliged to stay at home, it was not possible to carry out technical

training which requires the presence of a field, teammates and the coach. The technical work was primarily declined in favor of muscle strengthening. The results showed that the majority of players (82.4%) performed training mainly consisting of muscle strengthening, compared to a reduced number (10.3%) who favored aerobic training (Table 5). Jukic, et al. [13] also recommended that personalized conditioning training be performed with an emphasis on neuromuscular performance similar to proprioception, as this type of exercise is easy to perform indoors and even in confined spaces [22]. Moreover, this technique would play an important role in the precision of the movement and could prevent the occurrence of trauma and the recurrence of injuries in basketball players.

The majority of players believe they have lost their speed (60.5%) and endurance (74.1%) capacities, but few (39.5%) believe they have lost their strength capacities (Table 6). These results show that confinement has had an impact on the fitness of athletes. Due to the type of exercises used during the training sessions, which consisted mainly of muscle building, the observed gain in strength seems to be justified. On the other hand, Schwendinger, et al. [27] noted in their study that physical training should target skeletal muscle to improve fitness. In addition, due to the regulations adopted, the majority of the general population had only limited space and equipment to exercise. Therefore, physical training should primarily involve bodyweight exercises [22]. Muscle reinforcements would have induced a gain in strength [28,29]. This could justify the high percentage of players who gained strength in our study.

In addition, after the first session after returning to activities, the coach qualified as average the level of players (55.6%). This finding further confirms the negative impact of the restrictions on the player performance.

The semi-confinement created two types of situations for the basketball players in this study: one of hypoactivity involving few players who were not trained during this period; and the other of hyperactivity adopted by a large number of players, rich in muscular reinforcement (at the expense of more important technical training in basketball) due to a more individual than collective training (more interesting for basketball). We suggested that the increase in weight of the players modifying their weight status as well as the decrease in performance observed by the coach could be explained by this stronger muscle building in terms of the large number of sessions.

Limitations

This study is limited by the cross-sectional approach which does not enable us to assess the real impact of the

COVID-19 pandemic. Furthermore, many parameters were provided by the participants and the accuracy of this information's limits the internal validity of the study. Despite the fact that the instrument used was adapted from a validated questionnaire, the validity of this tool was not guaranteed.

Conclusion

The semi-confinement decreed due to COVID-19 significantly impacted the body composition of basketball players, the number and type of training sessions, as well as their physical performance. Nevertheless, basketball players maintained a certain level of training even though it was mostly done alone. Sport federations must develop specific programs personalized for each player in order to reduce the effects of confinement on physical performance, and adopt remote virtual methods to maintain permanent contact between the technical staff and the players.

This study provided behavior and attitudes of basketball players during the lockdown period due to the coronavirus pandemic. Therefore, appropriate measures can be sought for a safe return to sport without contamination. But, some information's (weight before pandemic) were just estimated by the sportsman himself, and the accuracy of the information is not guaranteed.

Practical Applications

The lockdown could be assimilated to the inter-season in various championships. Coaches and sports managers must put in place strategies to limit inactivity during periods of cessation of sport season, in order to promote healthy and safe return to sport.

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