

## **Perception and Attitude of Nigerian Athletes towards Bystander Cardiopulmonary Resuscitation**

### **Abstract**

**Background/Objective:** Effective practice of bystander cardiopulmonary resuscitation (CPR) will depend to a good extent on the perception and attitude of a population towards this life-saving technique. This study aimed at assessing the perception and attitude of Nigerian athletes towards this important procedure. **Methods:** A questionnaire-based national cross-sectional survey of Nigerian athletes was carried out during the 21<sup>st</sup> National Sports Festival (NSF) in Delta State, Nigeria, which continued after the festival in the various locations of the athletes in the country. The data obtained was analysed using SPSS version 25 and descriptive and chi-square statistics, as well as one sample t test were employed with significance level set at  $P < .05$ . **Results:** In all, 419 athletes were involved in the study - 278 (66.3%) males and 141(33.7%) females with age range of 11- 49 years and mean age of  $23.43 \pm 5.66$  (SD). The participants significantly had positive perception of ( $P < .000$ ) and attitude towards bystander CPR ( $P < .000$ ), which did not vary significantly with respect to their participation in contact or non-contact sports ( $P > .05$ ). **Conclusion/Recommendation:** The Nigerian athletes showed encouraging positive perception of bystander CPR and attitude towards it. Nigerian Governments should actively support the establishment of sustainable programmes for teaching and training of athletes in bystander CPR

**Keywords:** Perception, Attitude, Bystander Cardiopulmonary Resuscitation, Nigerian Athletes,

## 1. Introduction

Perception is defined as the ability to see, hear, or become aware of something through the senses [1]. It is also known to mean the way in which something is regarded, understood, or interpreted [1]. Perception (from Latin *perceptio* 'gathering, receiving') is the organization, identification, and interpretation of sensory information in order to represent and understand the presented information or environment. All perception involves signals that go through the nervous system, which in turn result from physical or chemical stimulation of the sensory system. Perception is not only the passive receipt of these signals, but it is also shaped by the recipient's learning, memory, expectation, and attention [2]. Perception, in humans, the process whereby sensory stimulation is translated into organized experience. That experience, or percept, is the joint product of the stimulation and of the process itself [3]. Attitude is a settled way of thinking or feeling about something that affects a person's behaviour. It can be a negative attitude or optimistic attitude [4].

Cardiopulmonary resuscitation (CPR) is an emergency procedure used to treat victims following cardiopulmonary arrest [5]. Sporting activities sometimes result in many trauma and critically ill patients, and the chance of survival after cardiopulmonary arrest may be increased with sufficient attitude and skill levels [5]. Attitude to CPR is central in people getting involved in the training and practice of this life-saving skill. Among cardiac care patients studied by Thoren et al [6], the major reasons for not being educated in CPR were a lack of awareness of the availability of CPR training for the public, lack of interest or lack of enterprise, and among those not educated in CPR, only 46% would like to attend a course. According to Kanstad et al [7], early bystander cardiopulmonary resuscitation (CPR) is essential for survival from out-of-hospital cardiac arrest (OHCA), and young people are potentially important bystander CPR providers, as basic life support (BLS) training can be distributed widely as part of the school curriculum. They concluded in their study as follows: young Norwegians are motivated to perform bystander CPR, but barriers are still seen when more detailed cardiac arrest scenarios are presented. By providing students with good quality BLS training in school, the upcoming generation in Norway may strengthen the first part of the chain of survival in OHCA [7].

Wingen et al [8] concluded in their study that the gender characteristics of OHCA victims, as well as schoolchildren themselves, have a relevant impact on the willingness to perform CPR. Training concepts should effectively motivate male schoolchildren to reduce pre-existing inhibitions, especially towards female OHCA patients. In Uganda, medical students were found to have poor knowledge of CPR but positive attitude [9]. Wang et al [10] in their study reported that the study reflected a deficiency of AED knowledge among the general public in China. However, positive attitudes towards rescuing OHCA patients and learning AED use were observed, which indicates that measures need to be taken to disseminate knowledge and use of AEDs [10]. In a recent study from Slovenia [11], significant progress in schoolchildren's cardiopulmonary resuscitation knowledge after training was established. Early introduction of training is recommended. Cardiopulmonary resuscitation knowledge raises awareness of the responsibility to help others and increases self-confidence to provide bystander cardiopulmonary resuscitation. It can be concluded that early cardiopulmonary resuscitation training for children is crucial. It should be a mandatory part of school curricula in those countries where cardiopulmonary resuscitation is not yet mandatory.

The goal of the study by Katona et al [12] was to explore the factor structure of the First Aid Willingness Questionnaire and determine its correlations and associations between sociodemographic and sport-related variables. Sport-related variables were investigated to

determine the effects on first aid attitudes. The study concluded that even though sport seemed to increase first aid willingness, future studies need to explore its associations, and that they believed that a deeper understanding of this topic could help prevent serious injuries or death in emergencies.

Generally, related earlier studies from Nigeria indicated very positive attitudes to bystander CPR [13-19]. However, poor knowledge and attitude towards CPR even among graduate health professionals in Ethiopia has been reported [5]. Also, Abebe et al [20] reported that health-care providers' knowledge, attitudes, and practices were inadequate, unfavorable, and unsafe regarding the management of cardiac arrest. Training on the assessment of critically ill patients, cardiopulmonary resuscitation, and cardiocerebral resuscitation should be provided for health-care providers. Similar report by Mersha et al [21] also gave suboptimal attitude towards CPR. In Upper Egypt [22], the results of the study demonstrated suboptimal and inadequate CPR knowledge among junior doctors and medical students in a representative hospital. However, participants reported overwhelmingly positive attitudes and eagerness towards the implementation of CPR training. They recommended that further research needs to be done to establish CPR skill proficiency as well as to investigate barriers to CPR training, effectiveness of available programs, and the potential implementation of such a program in Egypt.

Dibia [23] documented as follows: the world football came to a halt on Saturday when Danish playmaker Christian Eriksen collapsed while in action for Denmark against Finland in the ongoing Euro 2020 tournament. While many of the world football lovers feared for the worst at Eriksen's sudden collapse, his team captain Simon Kjaer was able to clear his teammate's airways and start the life-saving CPR technique, which was continued with the aid of a defibrillator and professional medical staff. Thankfully, Kjaer's first aid skills proved vital and Eriksen is now recovering in hospital and considered to be out of danger. Though CPR is quite easy to learn and it can be the difference between life and death before emergency medical services can arrive to help out, but many players have been left unfortunate and were unable to survive similar cardiac arrest related issue. Notable amongst them were these Nigerian players: August 12, 1989 brought a dark day in Nigerian football when Samuel Okwaraji collapsed and died in the 77th minute while playing for Nigeria in a World Cup Qualifier against Angola in Lagos. A further autopsy showed that the 24-year-old had an enlarged heart and high blood pressure. Okwaraji's death was so painful in the hearts of many because he was great personality with an accomplished career outside football. He was also a qualified lawyer who had masters in international law from the Pontifical Lateran University of Rome.

October 29, 1995 Nigerian football witnessed yet another sad moment when Amir Angwe who played for Julius Berger and had previously represented the national team died following a heart attack in an African Cup Winners' Cup match against Mozambique side Maxaquene. Sadly again, on May 26, 2009 Orobosan Adun of Warri Wolves FC who was earlier assaulted before an away match by thugs suspected to be fans of the opposition Enugu Rangers team died during a training session three days later as a result of internal haemorrhage. The pain of Nigerian players heart related deaths continued when Emmanuel Ogoli on December 12, 2010 collapsed on the pitch while playing for Ocean Boys, and died later in hospital. Ogoli had earlier received a "horror injury" in a match on November 14, 2010. Strangely, both the Nigeria Premier League and the Nigeria Football Federation announced separate investigations into his death [23]. There are still more victims of sudden cardiac arrest that could not benefit from bystander cardiopulmonary resuscitation. Dibia [23] concluded his

write up by saying: there is no doubt that sports directors especially in Nigeria have seen from Eriksen's recent situation what it means to have swift, efficient and competent medical equipment and personnel around us at such delicate moments with efforts to comply

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We still have limited documented reports on athletes with respect to bystander CPR in our environment [24, 25]. Recently, COVID-19 Pandemic has impacted the attitude towards bystander CPR globally [27-29]. Considering the limited available literature on attitude of athletes towards cardiopulmonary resuscitation, this national survey aimed at assessing the perception and attitude of Nigerian sports men and women towards bystander cardiopulmonary resuscitation (CPR). It is believed that the outcome of this study could inform future policy and initiatives to improve the rate of bystander CPR in Nigeria, especially among athletes.

UNDER PEER REVIEW

## **2. Materials and Methods**

### **2.1. Study Design**

A national self-administered questionnaire-based cross-sectional survey of Nigerian athletes was carried out, which targeted the 2<sup>1st</sup> National Sports Festival (NSF) tagged Delta 2022 that took place in Asaba, Delta State of Nigeria from November 28 to December 10, 2022. The National Sports Festival (NSF), otherwise known as ‘Nigerian Olympics,’ started in 1973 as a way of uniting the country after the Nigerian civil war that ended in 1970. The 14-day sporting event expected 14, 000 athletes from the 36 States of the country including the Federal Capital Territory (FCT), Abuja. The News Agency of Nigeria reported that no fewer than 14,000 athletes participated in 38 sports at the festival [30].

### **2.2. Sampling / Data Collection**

Although the research Assistants were physically present to ensure samples were collected from all the different sporting events, the busy schedule of the athletes did not make this easy. However, only 25 sports were covered in the final sample collected. In addition, most of the athletes who filled the questionnaire did so when they had returned from the event. In all, four hundred and nineteen (419) athletes filled and returned the questionnaire out of about fourteen thousand (14, 000) athletes who participated in the Sports Festival. The data collection lasted over 6-month period. See the Appendix for the questionnaire on perception and attitude towards bystander cardiopulmonary resuscitation used.

### **2.3. Weighting of the Responses in the Questionnaire**

For attitude, the responses were weighted as follows: Strongly Agree (SA) 5, Agree (A) had 4, Not Certain 3, Disagree (D) got 2, and Strongly Disagree (SD) 1. The responses for perception of bystander resuscitation (CPR) by the athletes were 5 for ‘Yes’, 2 for ‘No’ while ‘No response’ was given 3.

### **2.4. Null Hypotheses**

The following null hypotheses were generated and tested:

**Ho1-** that the perception of these athletes towards bystander cardiopulmonary resuscitation (CPR) would not be significantly positive

**Ho2 -** there would be no statistically significant difference in the perceptions of the contact sports athletes and non-contact sports athletes about bystander cardiopulmonary resuscitation (CPR)

**Ho3-** that the attitude of the athletes towards bystander cardiopulmonary resuscitation (CPR) would not be significantly positive

**H<sub>04</sub>**—there would be no statistically significant difference in the attitude of the contact sports and non-contact sports athletes towards bystander cardiopulmonary resuscitation (CPR)

#### **Data Analysis**

Using the SPSS version 25, the whole data was analysed descriptively, as well as using Chi-square statistics and One-sample t-test to test the hypotheses. The data was dichotomized into contact sports and non-contact sports. The significance level was set at  $P < .05$ .

UNDER PEER REVIEW

### 3. Results

Four hundred and nineteen (419) athletes participated in this survey, 278 (66.3%) males and 141 (33.7%) females with age range of 11- 49 years and mean age of  $23.43 \pm 5.66$  (SD).

Table 1 show the descriptive and chi-square statistics on the perception of all the athletes about bystander CPR, with statistically significant positive perception by the athletes for all the questions ( $P = .000$ ). This means rejection of the first null hypothesis.

**Table 1: Descriptive and Chi-square statistics on perception of all the athletes about Bystander CPR**

Variable	Yes (Positive)	No (Negative)	No response	Mean	SD	Chi-Square	df	Asymp. Sig
Perception 1	288(68.7%)	111 (26.5%)	20(4.8%)	4.1098	1.3367	265.952 <sup>a</sup>	2	.000
Perception 2	350 (83.5%)	50(11.9%)	19(4.5%)	4.5513	1.0279	478.573 <sup>a</sup>	2	.000
Perception 3	373(89.0%)	31(7.4%)	15(3.6%)	4.7064	.8512	585.642 <sup>a</sup>	2	.000
Perception 4	365(87.1%)	41(9.8%)	13(3.1%)	4.6444	.9383	548.124 <sup>a</sup>	2	.000

**Note:** Perception1 - CPR is just a trial and error thing, so it is not worthwhile to perform it on victims; Perception 2 - Sudden Cardiac Arrest victims can survive through CPR; Perception 3 - Every athlete should be trained in CPR so as to help any colleague that is a victim; Perception 4 - The gains of having every athlete trained in CPR outweigh the cost of training

The one sample T test on the contact sports and non-contact sports athletes' perceptions of bystander cardiopulmonary resuscitation (CPR) is provided in Table 2. The mean perception scores of the athletes involved in contact sports were not significantly different from those of non-contact sports athletes ( $P > .05$ ) in three out of the four questions. This means largely an acceptance of the second null hypothesis.

**Table 2: One sample T test on contact sports and non-contact sports athletes' perception of bystander CPR**

Test variable and Test Value	T	df	Sig.(2-tailed)	Mean Diff	95% Confidence Interval of the Difference	
					Lower	Upper
PC 1 vs NCPC 1	-.546	251	.585	-.04643	-.2138	.1210
PC 2 vs NCPC 2	-1.764	251	.079	-.11883	-.2515	.0138
PC 3 vs-NCPC 3	-1.266	251	.207	-.06993	-.1787	.0389
PC 4 vs NCPC 4	-3.574	251	.000	-.23281	-.3611	-.1045

**Note:** PC = Perception of bystander CPR by contact sports athletes; NCPC = Perception of bystander CPR by non-contact sports athletes

Descriptive and chi-square statistics on attitude of all the athletes towards bystander cardiopulmonary resuscitation (CPR) is shown in Table 3. It was only question 7 (I would perform chest compression only without mouth-to-mouth ventilation) that the athletes' responses gave significantly negative attitude ( $P = .000$ ), while they provided significantly positive attitude ( $P = .000$ ) in the other questions. This result means generally a rejection of the third null hypothesis in this study.

**Table 3: Descriptive and Chi-square Statistics on Attitude of all the Athletes towards bystander CPR**

Variable	Yes	No	No response	Mean	SD	Chi-Square	df	Asymp.Sig
Attitude 1	382(92.1%)	26 (2.5%)	11(2.6%)	4.7613	.77973	631.508 <sup>a</sup>	2	.000
Attitude 2	305 (72.8%)	98(23.4%)	16(3.8%)	4.2220	1.28700	317.647 <sup>a</sup>	2	.000
Attitude 3	349(83.3%)	58(13.8%)	12(2.9%)	4.5274	1.06761	478.200 <sup>a</sup>	2	.000
Attitude 4	382(91.2%)	26(6.2%)	11(3.6%)	4.7613	.77973	631.508 <sup>a</sup>	2	.000
Attitude 5	359(85.7%)	45 (10.7%)	15(3.6%)	4.6062	.97826	519.885 <sup>a</sup>	2	.000
Attitude 6	358(85.4%)	48(11.5%)	13(3.1%)	4.5943	.99644	516.348 <sup>a</sup>	2	.000
Attitude 7	182(43.4%)	222(53.0%)	15(3.6%)	3.3389	1.46888	172.644 <sup>a</sup>	2	.000

**Note:** 1 - When trained, I would like to teach others about CPR; 2 - When trained, I would perform mouth-to-mouth ventilation on a stranger; 3 - I would perform CPR on a trauma victim, if needed.; 4 - I would perform CPR on a relative, if needed; 5 - I would perform CPR on an elderly victim, if needed.; 6 - I would like to perform CPR on a child; 7 - I would perform chest compression only without mouth-to-mouth ventilation

Table 4 gives the one sample T test on the contact sports and non-contact sports athletes' attitude towards bystander cardiopulmonary resuscitation (CPR), which shows that the mean attitude scores for the contact sports athletes were not significantly different from those of their non-contact sports counterparts ( $P > .05$ ). Again, this means acceptance of the fourth null hypothesis.

**Table 4: One sample T test on the contact sports and non-contact sports athletes' attitude towards bystander CPR**

Test variable and Test Value	T	df	Sig.(2-tailed)	Mean Diff	95% Confidence Interval of the Difference	
					Lower	Upper
CA 1 vs NCA 1	-1.328	251	.228	-.09886	-2600	.0623
CA 2 vs NCA 2	-1.208	251	.079	-.11883	-.2515	.0138
CA 3 vs NCA 3	.466	251	.642	-.03068	-.0991	.1604
CA 4 vs NCA 4	-.573	251	.567	-.02840	-.1260	.0692
CA 5 vs NCA 5	-1.858	251	.064	-.10380	-.2138	.0062
CA 6 vs NCA 6	-.894	251	.372	-.05727	-.1835	.0689
CA 7 vs NCA 7	-.474	251	.636	-.04387	-.2260	.1383

**Note:** CA stands for attitude of contact sports athletes towards bystander cardiopulmonary resuscitation while NCA stands for the attitude of the non -contact sports athletes towards bystander cardiopulmonary resuscitation

## 4. Discussion

This first national survey on perception and attitude of Nigerian sports men and women towards bystander cardiopulmonary resuscitation (CPR) has revealed that the Nigerian athletes demonstrated significantly positive perception about bystander CPR with generally no significant difference between contact sports athletes and non-contact sports athletes. This present study also has shown significantly positive attitude towards bystander CPR without any significant difference between the contact sports athletes and their non-contact sports counterparts. These findings are consistent with an earlier related study that was limited to a State in Nigeria with a smaller sample size [25].

Much earlier related studies from Nigeria found similar positive attitude towards bystander CPR [14, 17-19]. These findings suggest that Nigerians, both children and adults, are positively disposed towards bystander CPR. However, the challenge has been that Nigerian governments are yet to give the necessary support and create the enabling environment for the teaching and practice bystander CPR in the country. Generally, previous reports have recommended the need for incorporation of this very important life-saving skill in the curricula of both secondary and tertiary institutions in Nigeria, as well as training the teachers and potential future teachers in order to create a multiplier effect in the number of potential bystander CPR providers in the country [14, 17-19]. Again, it is interesting that this present Nigerian study among the athletes has shown similar pattern in the attitude of the athletes towards bystander CPR as an earlier Nigerian study [25] that also recommended intentional training of these athletes so that they could be of help to one another in and out of the playing ground whenever any athlete is a victim of sudden cardiac arrest. Nigeria is a sport-loving nation and sports have helped to foster unity among the multi-ethnic people of the country. Meanwhile, Nigeria has suffered much from the sudden deaths of some of her brilliant sports men and must put in place a sustainable structure such as increasing rates of bystander CPR by encouraging wide spread training of potential bystander CPR providers, especially among the athletes to limit the loss of her athletes from sudden cardiac arrest in the fields of play.

It is worthwhile to mention here that while many countries of the world are generally increasing the awareness and training of potential bystander CPR providers [7-12, 20], Nigeria like most African countries have not given any serious attention to this. Meanwhile, the economic benefits of sports are so much needed in African countries where poverty is ravaging the continent.

### 4.1. The strengths and limitation of this study

Although the busy schedule of the athletes did not allow coverage of all the sporting events at the 21<sup>st</sup> National Sports Festival (NSF), the national fair representation of the study sample and the relatively good sample size remain part of the strengths of the present study. The findings could be seen as a fair reflection of the Nigerian athletes view. However, the fact that not all athletes from all the 36 States of the Federation including the Federal Capital, Abuja filled the questionnaire means that the interpretation of the findings should still be made with some caution.

## 4.2. Conclusion

- The Nigerian athletes showed significantly positive perception about bystander cardiopulmonary resuscitation (CPR) which did not generally change between contact sports athletes and their non-contact sports counterparts.
- The Nigerian athletes had significantly positive attitude towards bystander cardiopulmonary resuscitation (CPR) that did not significantly change between contact sports athletes and their counterparts involved in non-contact sports.

## Consent

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## Ethical Approval:

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

## 4.3. Recommendations

- Considering the important roles sports plays in Nigeria, the preventable pains often associated with sudden death of our sports men and women, and the interesting findings of this national survey, it is recommended that an intentional and sustainable programmes should be put in place to encourage all athletes to be trained in bystander cardiopulmonary resuscitation (CPR) skills so as to make them their 'brothers'/sisters' keepers' in and outside the fields of play, as well being a means of increasing the much needed bystander CPR rates in our country.

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## APPENDIX

### QUESTIONNAIRE ON BYSTANDER CADIOPULMONARY RESUSCITATION (CPR)

Dear Respondent,

This questionnaire is basically to assess the perception and attitude towards Bystander Cardiopulmonary Resuscitation (CPR) among athletes. It is expected that the findings of this survey will help to plan better for the safety of athletes. Please answer the following questions as sincere as possible.

Thank you and God bless.

#### Section A: Personal Data. Please tick as it applies to you

1. Gender: Male:                      Female:
2. Age in Years: -----
3. Type of Sport: -----
4. No of years as an Athlete: -----

#### Section B: For each of the statements, please rate under the following scales: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

	Questions	SA	A	Not Certain	D	SD
5	When trained, I would like to teach others about CPR					
6	When trained, I would perform mouth-to-mouth ventilation on a stranger.					
7	I would perform CPR on a trauma victim, if needed.					
8	I would perform CPR on a relative, if needed.					
9	I would perform CPR on an elderly victim, if needed.					
10	I would like to perform CPR on a child.					
11	I would perform chest compression only without mouth-					

	to-mouth ventilation					
12	CPR is just a trial and error thing, so it is not worthwhile to perform it on victims					
13	Sudden Cardiac Arrest victims can survive through CPR					
14	Every athlete should be trained in CPR so as to help any colleague that is a victim					
15	The gains of having every athlete trained in CPR outweigh the cost of training					

**THE END: Your views will be reflected in the final analysis. Once more, thank you.**

UNDER PEER REVIEW