Awareness and use of contact lenses in Sports in Trinidad and Tobago

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Abstract

Background: Vision plays an essential role in enhancing sport performance since several sport failures are due to movements being performed at the incorrect time or place. Refractive errors which cause may cause blurry vision in athletes can be corrected by wearing contact lenses which are hard or soft lenses that can replace glasses. Contact lenses can be quite beneficial to athletes as it gives a more "real" image. This is important since athletes need, not only good central vision but also great peripheral vision. The different types of contact lenses available are soft lenses, rigid gas permeable and scleral lenses. There are four different types of modalities; daily disposable, single-used lenses, disposable, frequent replacement and conventional lenses. It is important for eye-care practitioners to effectively educate and promotes awareness about the benefits and types of contact lenses as no athlete should be a risk of poor sports performance because of vision problems, and definitely not correctable visual problems such as refractive error.

Aim and Methodology: The aim of this study is to assess the awareness, knowledge and attitude of athletes toward contact lens use in Trinidad and Tobago. The sample population was purposely selected, and the study was conducted on athletes of Trinidad and Tobago. In order to assess awareness, questionnaires were distributed both online and in person to athletes of different sporting disciplines who gave permission to participate in the study.

This article summarizes the findings of one hundred and twenty-nine (129) athletes regarding, patterns of contact lens use, barriers to contact lens use and level of awareness toward contact lens use.

Findings and Conclusion: The research found that the level contact lens awareness was very low among the athletes of Trinidad and Tobago. Of the sample 56.3% (71) reported of having refractive error, however only 15.1% (19) of the population was contact lens wearers. Most persons do not

use contact lenses because they either think they do not have a need for contact lenses or, are not well educated on the topic. Of the contact lenses wearers in the sample, the most popular pattern of contact lenses use included daily disposable contact lenses being worn every day for 5-6 hours per day.

1.0 Introduction

Sport is regarded as an activity involving physical exertion and skill in which individuals or teams compete against another or others for entertainment. Sporting activities include football, tennis, cricket, track and field, golf, rugby, volleyball, cycling and netball.

Vision plays a key role in enhancing sports performance as it provides the athlete with the awareness on when and where to perform as they are constantly tracking moving objects. (1) Size, strength, and speed cannot compensate for the inefficient processing of visual information since several sports failures are caused by movement being performed at the incorrect time or place.

An important characteristic of vision perception that potentially affects sports performance is sight i.e. the ability to form a clear image on the retina. Failure to do this may be due to the refractive error of the eye causing the image to be blurry. Nevertheless, the visual acuity can be improved by prescribing contact lenses and spectacles lenses, though, spectacles are not conducive to sports activity. (2) Contact lenses offer a way to minimize the disadvantages found with most spectacle corrections, specifically, reduced field of view, fogging of lens, distortion, lack of safety, and frame discomfort. (3)

1.1 Background of Study

Optimal vision is an essential part of sports. There may be athletes who may not have enhanced sports performance because of visual impairment due to the refractive error of the eye. A refractive error occurs when the eye is unable to focus images sharply on the retina causing blurry vision. This can be a result of the length of the eye being too long or short, and irregularly curved cornea and crystalline lens of the eye. (4) The types of refractive errors are myopia, hyperopia, and

astigmatism. The main options to correct these refractive errors are contact lenses, glasses and refractive surgery.

Approximately 153 million people in the world have vision impairment because of uncorrected refractive error. (5) The prevalence of refractive error in adults worldwide is estimated to be 26.5%, 30.9%, and 40.4% for myopia, hyperopia, and astigmatism, respectively and around 140 million who are contact lens wearers. (6) The occurrence of refractive errors in the Caribbean is 44.6% with myopia at 19.2% and hyperopia at 45.7% in adults over 40 years old. Uncorrected refractive error was the primary cause of vision impairment in Trinidad and Tobago, 44% in total. (7)

Contact lenses refer to any hard or soft lens that can be placed on the front surface of the eye to replace glasses by correcting one's refractive error or to enhance cosmetic appearances. (8) Usually, contact lenses can be more convenient than spectacles while playing sports. The advantages that contact lenses offer compared to spectacle are that they are unbreakable, weightless and not affected by weather, therefore, athletes would be more comfortable using them. (9) Furthermore, they can be worn with protective sports gear and do not create distortions and chromatic aberrations. The optics of contact lenses are generally better than spectacles as there is no field of view limitations, hence, athletes are given a "real-life experience." The main factors needed for a desired contact lens fitting are centration so that it covers the entire pupil of the eye, the stability of the lens on the eye and the lens diameter which need to be larger than that of the pupil. The material of the contact lens should also be transparent, durable, flexible and permeable for oxygen. If the surface of the lens is not lubricated enough, it will be irritating or uncomfortable.

The different types of contact lenses that can be chosen are soft lenses, rigid gas permeable and scleral lenses. The different types of soft contact lens designs are spherical, toric and multifocal. The lens power across the entire optical portion of the Spherical contact lenses contain

equal strengths used to manage myopes and hyperopes. Toric soft contact lenses have different powers to correct astigmatism as well as myopia and hyperopia in various meridians of the lens. Multifocal contact lenses have specific power zones for near and far to correct presbyopia, astigmatism, myopia and hyperopia. (10)

When fitting contact lenses for athletes, modality is one of the main parameters that need to be considered. The modality of contact lenses is how often it should be disposed of. There are four different types of modalities; daily disposable which are non-reusable, single-used lenses, disposable lenses that are disposed of every two weeks, frequent replacement lenses that are discarded every month or six months and conventional lenses which are replaced every year. Daily disposable lenses are the most convenient lens design as it can increase patient compliance because there is no need to clean and disinfect lenses daily as it is thrown away after one use. (10) This also minimizes the risk of lens deposits leading to lens contamination and eye infections. Consequently, daily disposable lenses would be the ideal modality for athletes.

While many complications can result from contact lens wear, the causes of most complications are hypoxia due to less oxygen transmitted to the cornea, changes in the tonicity of the tear film, eye infections such as microbial keratitis, Acanthamoeba keratitis and giant papillary conjunctivitis. (11) This is why optometrists must correctly educate patients about the proper contact lens care and hygiene advice for their contact lenses to avoid these potential risks.

As primary eye care physicians, optometrists need to help athletes understand the need to protect their eyes and ensure optimal vision while participating in sports by doing a comprehensive eye examination for contact lenses. During this contact lens exam, the case history, patient motivation, expectations, wearing schedules and eye health will be assessed. Different eye tests will be performed to determine the most appropriate prescription, diameter, base curve, material

and design of the contact lens that is needed. Subsequently, the optometrist will have an after-care appointment to ensure that the contacts chosen fits correctly and that there are no issues after the selected wear time. (12)

To our knowledge, there is a paucity of data about the pattern, awareness and use of contact lens among sportsmen and women in Trinidad. Knowledge about the use and pattern of contact lenses will help optometrist and other eye care personnel in guiding sport men and women on the best modality, hygiene and management in the fitting of contact lenses. The aim of this academic research study is to determine the awareness, knowledge and attitude of athletes towards contact lens and UV exposure protection use in Trinidad.

1.2 Statement of the Problem

While participating in any sporting activity, it is crucial that an athlete has optimum vision in order to perform the necessary task efficiently and be victorious in his sporting discipline. Globally, about two billion people have impaired vision, may it be near or distant (5). Although spectacles are then most common and safest way of correcting refractive error (13), contact lenses have a wide range of advantages which can greatly benefit athletes. These include, wider field of view, no extra weight, no frame to obstruct the vision, no fogging with change in weather (9). These and many more factors make contact lenses “superior to spectacles in sport” (3).

During the initial discussions between the patient and their eye-care practitioner, the athlete’s motivation, wearing time, modality of contact lens can be established followed by the type of contact lens after further eye assessment since contact lenses are not standardized; they require a professional’s skill and knowledge to successfully fit on the eye. In addition, Clinical information as well as personal attributes of the athlete such as contact lens hygiene, habits, type of sport played, and occupation should be collected when in the process of selecting a suitable contact lens.

However, in some cases, patients may not be aware of the most recent available contact lens options, hence, the importance of Optometrists to educate their patients. Therefore, when an Optometrist is fitting an athlete with contact lenses, all available options must be navigated through in order to make one final recommendation that is customized for the athletes and their specific sport.

The main reason for this study is to assess the awareness, patterns of use and barriers preventing the use of contact lenses among the athletes of Trinidad and Tobago. This may be one step toward enhanced sport vision among the athlete population as this information can be used to form better wear habits and even combat some of the obstacles that prevent athletes from utilizing contact lenses to their advantage.

1.3 Aim of Study

The aim of this academic research study is to examine the awareness, knowledge and attitude of athletes towards contact lens use in Trinidad and Tobago.

1.4 Objectives of Study

The specific objectives which would be investigated in this study are:

- to analyze the pattern of contact lens use among people in sports
- to evaluate the level of the awareness of contact lens use among sportsmen and women
- to identify the barriers in the utilization of contact lens use among athletes

1.5 Research Questions

- What is the level of awareness among athletes towards the use of contact lenses?
- What pattern of contact lens modality is used among athletes in Trinidad and Tobago?
- How do barriers affect athletes in the utilization of contact lenses in Trinidad?

1.6 Hypothesis

If there is an undersized or limited amount of athletes who do not wear contact lenses and are uninformed of the benefits and advantages of them, then there is lack of awareness and sue of contact lenses in sports in Trinidad and Tobago.

1.7 Significance of Study

The findings of this study will highlight the level of awareness of the patterns of use and barriers to use of contact lenses among the athletes of Trinidad and Tobago. Sports are embedded in Trinidad and Tobago's culture due to the many benefits such as providing entertainment, encouraging exercise, and instilling lessons in sportsmanship, perseverance and school spirit. This study will allow for assessment of the current patterns of use of contact lenses among athletes, and some of the barriers which hinder athletes from benefiting from the advantages of contact lenses. Understanding misconceptions that the athlete population may have about contact lenses, can be useful in educating and increasing awareness.

Optometrist will benefit mostly from this study, as they will now have a better understanding of the current patterns of athletic patients, and can use this to improve assessment, treatment, management and education of these patients. Optometrist can also use these finding to understand the barriers that curb contact lens use and ways in which they can be lessened.

Apart from optometrist, athletes themselves can also benefit from this study as the overall goal is to improve athlete perception toward contact lens use, in order to encourage proper contact lens, use among the athlete population. This will ensue that athletes not only have improved vision with lenses that are geared toward the type of rigorous movement that they engage in while doing sports, but also enhance their sport performance by providing optimum visual correction for sport.

These findings may also be beneficial to future researchers as this information can be used as a steppingstone to investigate other ideas within the same general category such as, the market for photochromatic contact lenses among the athlete population, the prevalence of contact lens related eye problems among the athletes of Trinidad and Tobago and assessment of the best modality of contact lenses of athletes in Trinidad and Tobago.

1.8 Delimitation of Study

The area in which our study in concentrated on is athletes over eighteen years of age who reside in Trinidad and Tobago. The sports facilities included football, track and field, netball, cycling, volleyball, cricket, rugby and swimming. However, this study was not limited to these sports.

1.9 Limitation of Study

This study has possible limitations such as lack of previous research relating to the relationship between contact lenses and sports vision as they are both rapidly evolving fields, they do not have the exposure needed in order to bring more attention and interest of the research to the public eye in the Trinidad population. The following limitation is related to the sample size. This can affect the reliability and validity of the data to be collected. The athletic population in Trinidad may be considered as “small” compared to larger associations such as a non-specific target audience. A small sample size can also increase the bias of study where individuals may not have the opportunity to partake in the survey thus reducing the response rate. Also, the methodology used was purposive sampling which could create bias in the research. A case control method would be encouraged in future research. Lastly, physical access to information is limited leading to online approaches that can prevent variable information. Nonetheless, these limitations must be considered while carrying out the research and should also be addressed in future studies.

1. 10 Definition of Terms

- Contact Lens – This refers to a lens that is placed on the surface of the cornea and sclera of the eye, either for optical purposes to improve visual acuity or therapeutic purposes to treat eye disorders.
- Cornea – A clear, transparent structure of the eye which allows light to pass through.
- Sclera – Firm, fibrous, white part of the eye which is continuous with the cornea.
- Retina – Sensory receptor for light which is a layer at the back of the eye.
- Visual Acuity – The sharpness of a person's vision.
- Distortion – An aberration through optical glass that causes object to appear other than their true form
- Refractive Error – A refractive error occurs when the eye in unable to focus images clearly on the retina causing blurry vision.
- Myopia –This occurs when a distance object comes into focus in front of the retina making it blurry but objects at near are in focus.
- Hyperopia – Hyperopia or far-sightedness occurs when a near object is focused behind the retina, causing it to appear blurry.
- Astigmatism – Astigmatism is where objects at near and far appear blurry because of unequal focusing of the object on the retina due to the oblong shape of the cornea.
- Presbyopia – Presbyopia is the slow, gradual and age-related process of the eye's inability to accommodate caused by the progressive denaturation of the proteins of the lens making it less elastic.
- Chromatic Aberrations – This occurs when the edge of a lens behaves like a prism and breaks light up allowing colour fringes to appear

- Microbial Keratitis – Inflammation of the cornea produced by replicating organisms.
- Acanthamoeba Keratitis – A sight-threatening eye infection which involves an amoeba organism called Acanthamoeba.
- Giant Papillary Conjunctivitis – Red bumps seen on the inside of the eye-lids that may indicate an infection or irritation.

2.0 Literature Review

2.1 Contact Lens and Materials

Contact lenses can be considered as hard or soft material which is determined based on the structure of its material composition. The most popular type of contact lens is the soft lens with planned replacement. This can either be daily, two weekly, monthly or even quarterly. Soft contact lenses can be composed of silicone hydrogel or hydrogel material. Silicone lenses are more flexible than hard lenses as they conform to the shape of the cornea of the eye quicker than a rigid hard lens. The spin cast method, which uses liquid material rotating in a mold at a regulated speed and temperature to create the power and shape of the lens, can be used to make soft lenses. Silicone lenses are made by pouring liquid into a metal or glass mold. A machine lathe can also be used to remove soft lenses, or they can be cast molded. (14).

The benefit of such lens is the great eye health, as the lens allows for good exchange of oxygen between the tear film and the cornea and patients do not have much difficulty inserting and removing such lenses (13). Hence, contact lens new wearers, neophytes, can consider these lenses for its safety and convenience. In addition, these lenses are also advantageous regarding infection control as the cleaning process is simple and easy and so the rate of infection is reduced. Hence, contact lens new wearers, neophytes, can consider these lenses for its safety and convenience.

Soft contact lenses also have drawbacks, mainly which vision is not guaranteed to be the sharpest when compared to rigid gas permeable (RGP) contact lenses which is another popular type of lens. They are composed of a material which includes silicone in order to provide oxygen permeability and high water content. RGP lenses also have health advantages such as it is the lens of choice for patients with keratoconus, irregular corneas, and who undertook refractive eye surgery (14).

As mentioned previously, a contributing factor to overnight wear complications is post-lens debris entrapment. The rigid lens surface of GPs results in greater edge lift that provides enhanced tear flow to eliminate post-lens debris. The rigid surface is also responsible for the orthokeratology effect that has become more noteworthy since the introduction of the Paragon CRT system and has continued with B&L's Vision Shaping Treatment and other orthokeratology lens designs. As previously mentioned, post-lens debris entrapment is a contributing factor to overnight wear complications. Because of the rigid lens surface of GPs, there is more edge lift, which allows for greater tear flow and the removal of post-lens debris (15).

The gas permeable lens though, since it is smaller than a soft lens, may slip off center quite easily and in the case of an athlete, it may become dislodged due to vigorous sporting activities (15). Other lenses that are not as popular among the athlete community are, the extended wear which can be worn overnight, and the extender wear disposable, which can be worn for an extended period for about six days before being discarded (13). These lenses are not raved about among the athlete community because most athletes prefer to use contact lenses only for sport and use their regular spectacles for everyday activity, therefore they do not have a need for extended wear contact lenses. Also extended- wear lenses do not correct all vision problems and could increase the risk of complications and infection.

2.1.1 Athletes and the use of Contact Lens

In an article, “Sports vision: What and how to prescribe ophthalmic products” by Jannie T. Ferreira, B. Optom, it was indicated that numerous athletic patients were prescribed toric disposable for everyday wear and spherical daily disposable contact lenses by considering the athlete’s individual preferences and the nature of the sporting activity. These contact lenses offer several benefits in terms of reducing the drawbacks associated with wearing spectacles such as blurry vision, lack of safety and discomfort.

When playing sports, contact lenses is regarded as more comfortable and safer than spectacles. They allow for the use of protective eyewear in combination with the use of contact lenses while maintaining optimum vision. When dealing with toric lenses, which can move off-axis and become unstable, causing poor vision, it is important to keep in mind that stable vision is an important and a key fitting characteristic that should always be ensured. Additionally, tinted contact lenses can aid better colour contrast. For example, golfers may prefer brown lenses due to the green golf course whereas grey lenses are favoured in sporting activities with brown-coloured environments (16).

One of the main benefits of daily disposable lenses in terms of comfort is that the lenses have a smaller window of opportunity for the accumulation of lens deposits. This was shown in a study of where patients wore daily disposable, monthly, and bi-weekly lenses, it was found that bi-weekly lens wearers were substantially less compliant with replacement than daily disposable lens wearers, who had the highest compliance percentage (17). Thus, replacing contact lenses daily would enhacne long-term comfort.

With respect to, health and safety, patients wearing daily disposable lenses had a significantly lower risk of eye problems as opposed to patients wearing reusable lenses, according to a major case-control study. As a result, daily disposable contact lenses are the best option and safest modality, as reusable lenses can cause complications due to overuse of lenses and improper disinfection which can result in eye injections (18). Hence, changing lenses daily will decrease bacterial growth and the risk of a variety of eye conditions that could be adverse/harmful or sight-threatening.

Lastly, an article by Gary Heiting, OD and Donald S. Teig, OD, titled “Contact lenses that improve sports performance” tells us that a hybrid contact lenses is the best for athletes.(19) This lens is described as one having a gas permeable center and a soft periphery. Heiting and Donald state that this lens is best because it combines the crisp optics of an RGP with the great comfort of a soft contact lens to create a lens that is optimum for athletes and best of all, it is less likely to become dislodged. (19) the article even goes on to say that a good lens for athletes would be on with a tint. Most athletes prefer amber and green tint (19), however it depends heavily on personal preference.

2.2 Contact lens fitting

The right fit plays a big role in the visual and physical comfort of a contact lens. The one-size fits-all approach is not only uncomfortable but can also be very dangerous as serious eye complication can result from ill-fitting contact lenses (20). To determine what lens should be used to provide the right fit, proper measurement must be taken. According to Dr. Carissa Lumby, in an online article titled “Importance of Proper Contact Lens Fitting" proper contact lens measurements include, measuring the curvature of the cornea, using a keratometer or in some case

a topographer if the patient has an unusual curvature. It is also important to measure the pupil according to Lumpy. And in some cases, the practitioner may assess the integrity of the tear film, in order to predict the interaction between the eyes and the contact lenses. After proper measurements, the practitioner will then decide which lens is best suited for the patient and he will continue with the fitting process (20). The fit will be properly assessed while the contact lens is in the eye and the patient will be given some trial lenses to asses if there is any change in the health of the eyes while wearing the lenses.

Another article by Shalu Paul, OD states that each lens modality has its own fitting principles (21), therefore the fitting process for soft spherical and toric lenses will differ from that of soft multifocal and custom soft lenses. And so does the fitting process for RGP and Scleral lenses. However, Paul maintains that the measurement must be precise and clear in order to obtain a good fit. Only after the fit, vision and the comfort of the lenses are satisfactory, and no harm is being done to the cornea then the lens prescription should be finalized. (21) Although this process may seem tedious and will include many more visits than for spectacle correction, these steps are crucial in ensuring great vision for the patient while wearing lenses.

2.3 Severe Adverse Effect

Many people may be opposed to contact lenses as contact lenses, if misused, may have very severe adverse effects. To understand these effects, we must first understand how they arise. According to the National Academy of Science in an article titled “Adverse effects of Contact Lenses", contact lens complication can arise from the following factors; mechanical factors which will include any irritation of the eyelid and cornea due to the type of lens or lens design, as well as improper fitting or foreign bodies causing physical irritation of the eye. Other factors include,

psychological factors, immunological factors such as allergies and tear film alteration. (22) Some complications that may arise from these factors include infection, corneal edema, superficial keratitis, red eye, excess mucus production, infiltrates, endothelial polymegathism, corneal molding, giant papillary conjunctivitis corneal vascularization, lens intolerance, meibomitis, and dryness related effects. (22)

Another article by Oliver Schein, titled “Adverse reactions associated with Contact Lenses” states that the two contact lens complications that result in permanent compromise to visual acuity are corneal neovascularization and corneal ulceration (23). Corneal neovascularization is most time a result of hypoxia, and inflammation. Since the cornea has no blood vessels and so does not have its own blood supply, relies on oxygen through tear exchange. Once the oxygen supply is compromised, the cornea then tries to find ways of supplying itself with blood, which is through neovascularization. This is mostly seen in soft extended wear lens users. Neovascularization can severely affect the vision depending on the degree. Corneal ulceration, which is usually expressed as microbial keratitis is as a result of a compromise in the surface of the cornea. Once the corneal surface is compromised, it gives way to pathogens on other foreign bodies to fester within the cornea.

In conclusion, fitting athletes with contact lenses should be approached with care, as athletes' vision requirements are typically much higher than those of an average person. Contact lenses have changed the lives of athletes by not just by correcting refractive errors, but also provide less limitations and restraints. Unfortunately, because contact lenses may cause athletes to experience dissatisfying and unwanted complications, an unjustified lens design can have a negative impact on one’s athletic performance (24). Therefore, the contact lens issues mentioned previously can be avoided and the effects reduced once the causes, risk factors and management

of these eye conditions are addressed properly in full detail by an eye care practitioner as it related to the athlete.

3.0 Methodology

3.1 Ethical Consideration

The research study was conducted after the proposal was submitted to the University of the West Indies, Campus Research Ethics Committee to ensure consent was given before commencement of the research. The committee then reviewed the proposal and final approval was given on January 25th, 2021. In the questionnaire, a consent form was included for the participants to confirm confidentiality and permission to partake in the study. It was noted that there were no eye-procedures of any kind performed and subjects were only required to complete the questionnaire which contained a mixture of open-ended and closed-ended questions related to social demographics, pattern of use of contact lenses and the issues towards them. The participants were informed that the purpose of the study was to examine the awareness, knowledge and attitude towards contact lenses and the use of protection against UV exposure.

Informed consent was ensured by explaining and informing the participant about the purpose of this project. There were no risk, discomfort, inconvenience, side effects, and financial costs to participants. They were aware that participation was voluntary and withdrawal from the study could have been done at any time without having to provide a reason why. However, once they chose to complete the survey, this indicated informed consent. The anonymity of personal information was ensured and there was a maintenance of privacy and confidentiality of the data obtained from each participant as the study will be stored for five years in the research supervisor's office in a password-protected system.

3.2 Research Design

The study design used was a cross-sectional study. This type of study was chosen as it was used to determine the problems related to the visual needs of the population and was especially helpful in updating and informing the optometric industry about the results and recommendations. The prevalence of a condition or situation in the population was also measured by this form of data. The key variables tested were the pattern of contact lens use among people in sports, the level of the awareness of contact lens use among sportsmen and women and barriers in the utilization of contact lens use among athletes.

3.3 Study Population

The sample population was conducted on the Trinidad population. The sample population was purposely selected as it was conducted on athletes in the Trinidad. This guaranteed that the research reflected on the responses from the sportsmen and sportswomen, thereby, having a better representation of sports vision in the Trinidad population.

3.3.1 Area of Study

This study was conducted online in Trinidad. The official language of Trinidad is English and its culture consists of Afro-Trinidadians, Indo-Trinidadians, Caucasians, Chinese and other ethnic groups. The population in Trinidad and Tobago is 1,401,059. (19) However, participants were recruited throughout the areas in Trinidad from community centers, sports organizations and sports clubs and also through digital platforms such as social media.

3.3.2 Inclusion Criteria

The participants who took part in this research study included athletes over the age of 18 years, athletes who resided in Trinidad for more than six months and athletes who agreed and gave consent to partake in the study.

3.3.3 Exclusion Criteria

The participants who did not take part in this research study included athletes who did not reside in Trinidad for at least six months, athletes below 18 years of age and athletes who did not allow consent to participate in the study.

3.4 Sample Size and Sampling Technique

Sample Size

The parameters for the sample size chosen were computed by providing a confidence level of 95% with a margin of error of 5%. The total study population size needed was calculated to be 306 participants.

3.4.1 Sample Size Determination

The sample size was calculated using the statistical programming software, Raosoft. This ascertained that predisposition and bias were eliminated from the selection process to ensure that athletes had a fair chance of being selected and that the target population was represented to achieve the specific objectives.

3.4.2 Sampling Technique

The non-probability sample procedure utilized was purposive sampling which involved an iterative process and adaptive approach of choosing the research subjects. The target audience

selected to be analyzed were athletes of various sports such as football, netball, cricket, volleyball, cycling and track and field in Trinidad. The study conducted focused on the particular practices of this group who had most relevant and relatable responses to the research questions.

3.5 Tests and Instruments

A self-administered questionnaire which contained a combination of open-ended and closed-ended questions was adapted to the study in order to make clear and informed conclusions. It involved twenty questions which were partitioned into four sections which reflected athletes' social demographics, awareness, pattern and barriers of contact lens use. Information was obtained about the behavior towards contacts and if worn, the reason for wearing, type of contacts used and complications while wearing.

The consistency of the data obtained from the athletes was monitored so that conclusions were drawn based on valid and reliable data. This was achieved by ensuring the dependability of the data, identifying mistakes made in the methodology and reducing social demographic, financial and cultural misinterpretations. The questionnaire was clearly organized and presented with appropriate instructions and definitions of ophthalmic terminology where needed.

3.6 Data Collection Procedure

Data was collected anonymously using an authorized questionnaire that was evidently organized, presented with appropriate instructions and where analytical and descriptive information were evaluated. Subjects were recruited from community centers, sports organizations and sports clubs and also through digital platforms. Due to the ongoing world pandemic and social distancing protocols implemented everywhere, it proved to be difficult to recruit participants for the research study. However, various sports teams within the sports facilities were approached via

team captains who helped disseminate the information about the research questionnaire among sportsmen and women.

The captain of the participating team compiled an anonymous coded list to maintain confidentiality and privacy among team members. The research team members then contacted each participant to request preference either by online, in person or virtually structured questionnaire, for example, a zoom meeting which took place between the researcher and participant to respond to the structured questionnaire. Upon contact, the participant indicated interest or dissent in partaking in the project after reading the consent form containing the information about the research project. The participant's consent was gained once agreement was indicated to respond to the questionnaire. Informed consent was obtained from all the respondents, and the research was conducted strictly by following Helsinki's Declaration. The participants had the right to decline in partaking at any point in time without any penalty.

3.7 Data Analysis

The data collected was entered into the Statistical Package for Social Sciences software, SPSS, version 25 for windows to be analyzed. This enabled correlations and predictions to be made from the results obtained from the questionnaire. If there were fewer candidates from a specific county, the researchers contacted more sports facilities in that region to pursue permission to distribute the questionnaire to reach a wider audience in that area. The testing method used was descriptive statistics and univariate, bivariate and multi-variate statistical analysis in order to summarize and compare the numeric and continuous variables.

4.0 Results

Participants' Characteristics

Out of 129 athletes from Trinidad and Tobago who participated in this research study, 53.2% (67) were male while, 46.8% (59) were female. Students dominated the study, 48.4% (61), and the most popular age group 61.9% (78) were between 18 and 24 years old. Most of the sample 32.5% (41) engaged in a combination of more than one different sport, with majority of the participants 88.9% (112) doing these sports for more than 2 years.

Characteristic	**Number of Participants (%)**
Population Demographics	
Gender	
Male	67 (53.2)
Female	59 (46.8)
Occupation	
Student	61 (48.4)
Administrative Assistant	6 (4.8)
Healthcare Practitioner	2 (1.6)
Secretary	4 (3.2)
Teacher	5 (4.0)
Manager	3 (2.4)
Food Preparation	9 (7.1)
Architecture and Engineering	4 (3.2)
Sales	4 (3.2)
Construction	1 (0.8)
Community and Social Service	3 (2.4)
Combination/Other	24 (19.0)

Age (years)			
18-24		78 (61.9)	
25-34		34 (27.0)	
35-44		6 (4.8)	
45-54		4 (3.2)	
55-64		4 (3.2)	
Variable	**Mean**	**Mean Standard Error**	**Standard Deviation**
Age	1.59	0.085	0.957
What sport do you engage in?			
Football		28 (22.2)	
Track and Field		21 (16.7)	
Netball		6 (4.8)	
Cycling		9 (7.1)	
Volleyball		13 (10.3)	
Cricket		6 (4.8)	
Rugby		1 (0.8)	
Swimming		1 (0.8)	
Combination/Other		41 (32.5)	
How long have you been doing this sport?			
< 6 months		4 (3.2)	
6 months to one year		4 (3.2)	
1 – 2 years		6 (4.8)	
> 2 years		112 (88.9)	

Table 1: Table showing totals for Subject Demographics

Awareness of Contact Lens Use

Of the athletes who participated in this study, 53.3% (71) had refractive error, with 61.9% (78) were spectacle users and 15.1% (19) being contact lens users.

Characteristic	Number of Participants (%)
Awareness of Contact Lens Use	
Do you have Refractive Error?	
Yes	71 (56.3)
No	43 (34.1)
Not Sure	12 (9.5)
Do you Wear Glasses?	
Yes	78 (61.9)
No	48 (38.1)
Do you wear Contact Lenses?	
Yes	19 (15.1)
No	107 (84.9)

Table 2: Table showing totals for Awareness of Contact Lens Use

Pattern of Contact Lens Use

In the present study, the most used modality amongst the athletes who wore contact lenses was daily disposable 7.9% (10) followed by reusable contact lenses 7.1% (9). The majority of athletes wear contact lenses everyday 5.6% (7) and think that contact lenses do indeed enhance their sports performance 13.5 (17).

Characteristic	Number of Participants (%)
Patterns of Contact Lens Use	
How Often do you wear Contact Lenses?	
N/A	107 (84.9)
Everyday	7 (5.6)
A few days a week	5 (4.0)
Once a week	0 (0)
A few days a month	4 (3.2)
Once a month	2 (1.6)
Other	1 (0.8)
How many Hours do you Wear Contact Lenses?	
N/A	107 (84.9)
4 or fewer hours	1(0.8)
About 5-6 hours	7 (5.6)
About 7-8 hours	6 (4.8)
About 9-12 hours	3(2.4)
More than 12 hours	2 (1.6)
Do you only wear Contact Lenses for Sports?	
N/A	107(84.9)
Yes	8 (6.3)
No	11 (8.7)
What type of Contact Lenses do you wear?	
N/A	107(84.9)
Daily Disposable	10 (7.9)
Reusable	9 (7.1)
Have you ever had a Contact Lens Related Eye Problem?	
N/A	107(84.9)
Yes	3 (2.4)
No	16 (12.7)
Do you think Contact Lenses Enhance your Sport Performance?	

N/A	107(84.9)
Yes	17 (13.5)
No	2 (1.6)
Do you prefer Contact Lenses or Spectacles?	
N/A	107(84.9)
Contact Lenses	19 (15.1)
Spectacles	0 (0)

Table 3: Table showing totals for Patterns of Contact Lens Use

Barriers to Contact lens Use

In reasons for never wearing contact lenses, it was found that the vast majority of athletes quoted no need to wear contact lenses 36.5% (46), followed by a combination of all barriers 19.9% (25) lack of education 12.7% (16), inconvenience 8.7% (11), hygiene concerns 3.3% (4) and cost 4% (5).

Characteristic	Number of Participants (%)
Barriers to Contact Lens Use	
Why have you never tried Contact Lenses?	
N/A	19 (15.1)
Cost	5(4.0)
Inconvenience	11 (8.7)
Hygiene Concerns	4 (3.3)
Not educated enough about contact lens use	16 (12.7)
No need to wear contact lenses	46 (36.5)
Combination/Other	25 (19.9)
Do you think Contact Lenses are a good alternative for glasses?	
Yes	111 (88.1)
No	15 (11.9)
Do you Usually Protect your eyes against UV exposure?	
Yes	72 (57.1)
No	54 (42.9)
What method of UV protection do you find most Effective?	
Sunglasses	74 (58.7)
Hats	34 (27.0)
Other	18 (14.3)
Would you be interested in contact lenses that can enhance vision and protect against UV exposure?	
Yes	84 (66.7)
No	42 (33.3)

Table 4: Table showing totals for Barriers to Contact Lens Use

Gender and Age in Sports

It is noted that the dominated age group amongst the female and male athletes was 18-24 years. The more elderly age groups, 45-54 and 55-64 years, had the least amount of respondents in both genders.

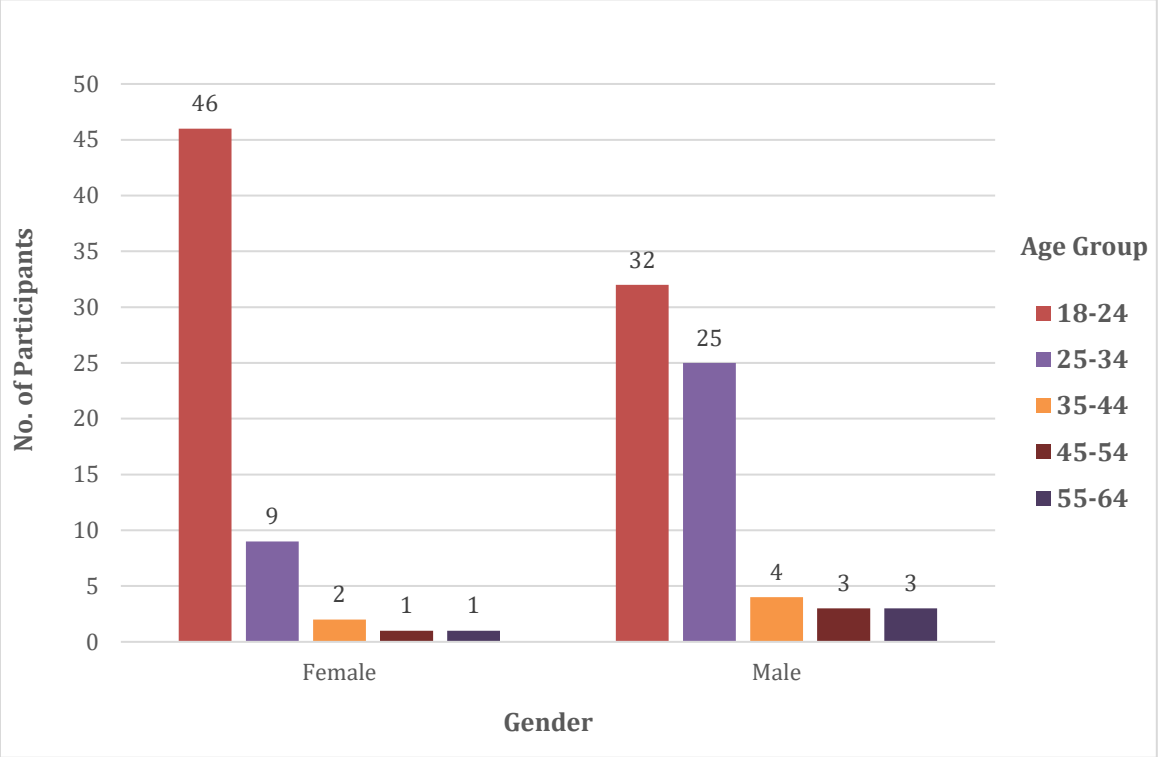

Figure 1: Bar Graph showing Age with respect to Gender

Gender and Sports

The most popular singular sport amongst female and male was track and field and cycling respectively. The largest amount of athletes in both genders played a combination of the different sports. Netball and cycling were the sports with the fewest male and female respondents, respectively.

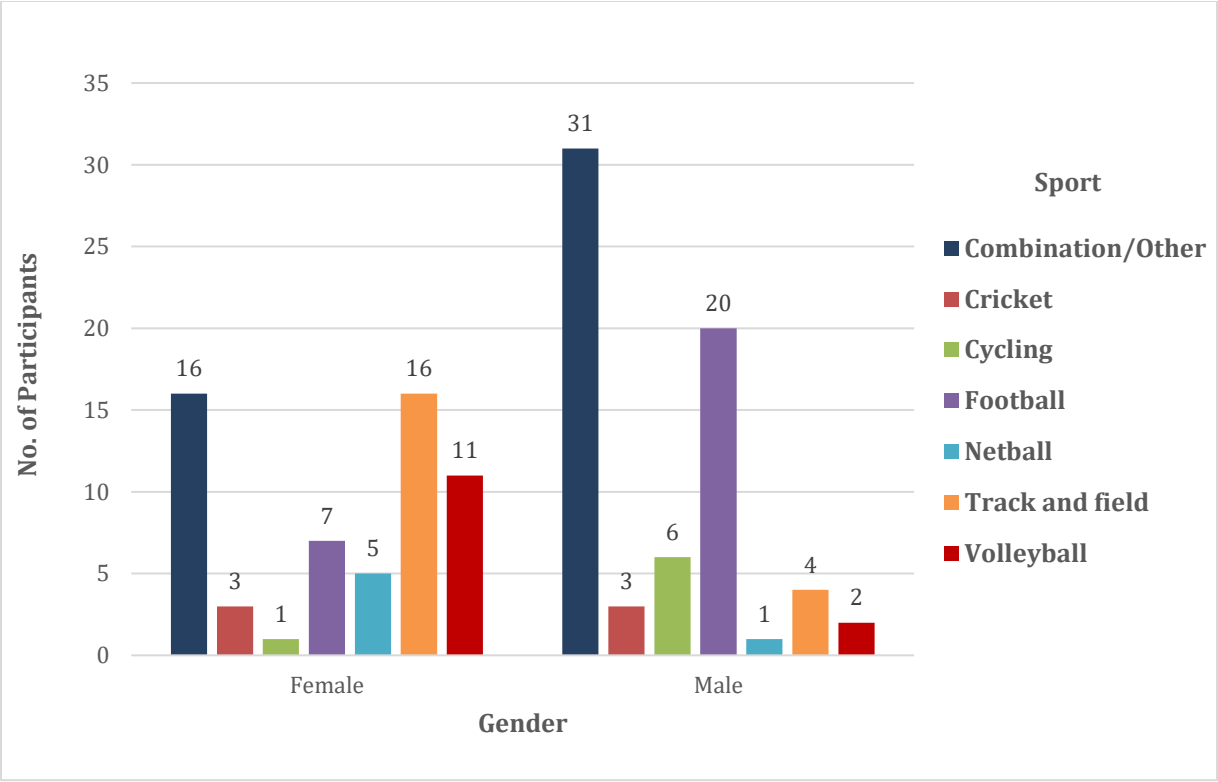

Figure 2: Bar Graph showing Type of Sport with respect to Gender

Refractive Error and Sports in Trinidad

The majority of athletes in this study who have a refractive error wear glasses and most athletes who do not have a refractive error do not wear glasses.

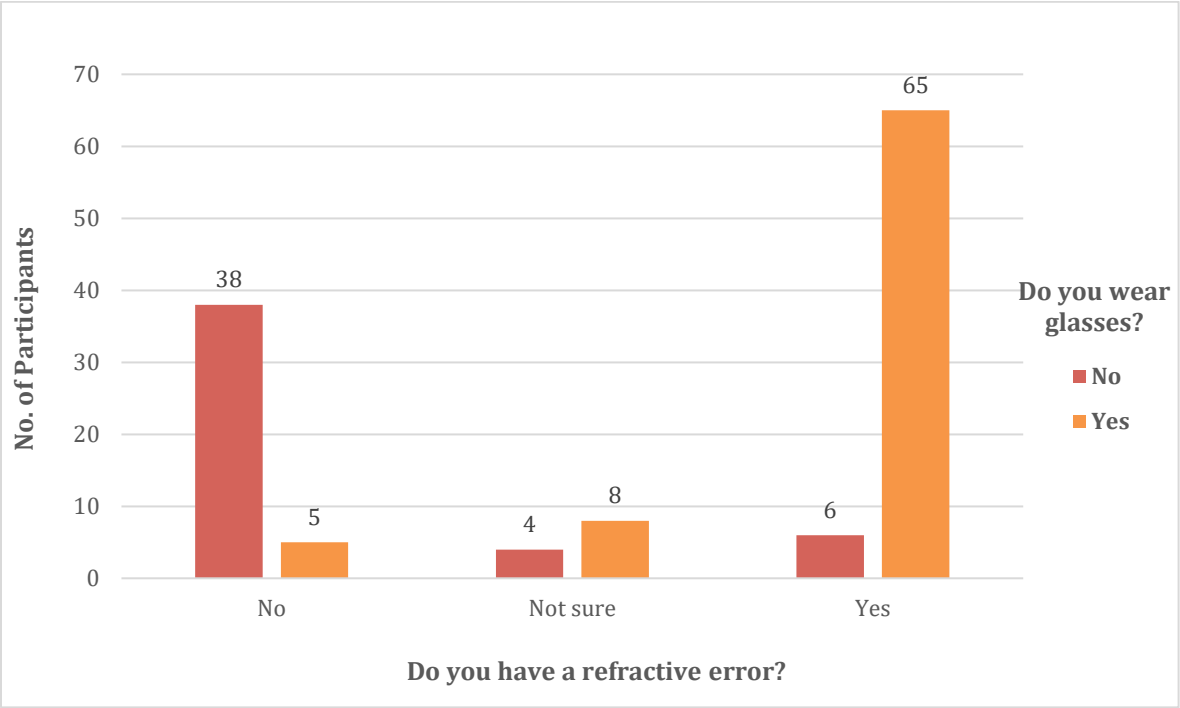

Figure 3: Bar Graph showing use of glasses amongst athletes with respect to presence of a refractive error.

Contact Lens Use and Refractive Error

Amongst all the athletes who have a refractive error, more than twice as many athletes with a refractive error do not wear contact lenses as those who do.

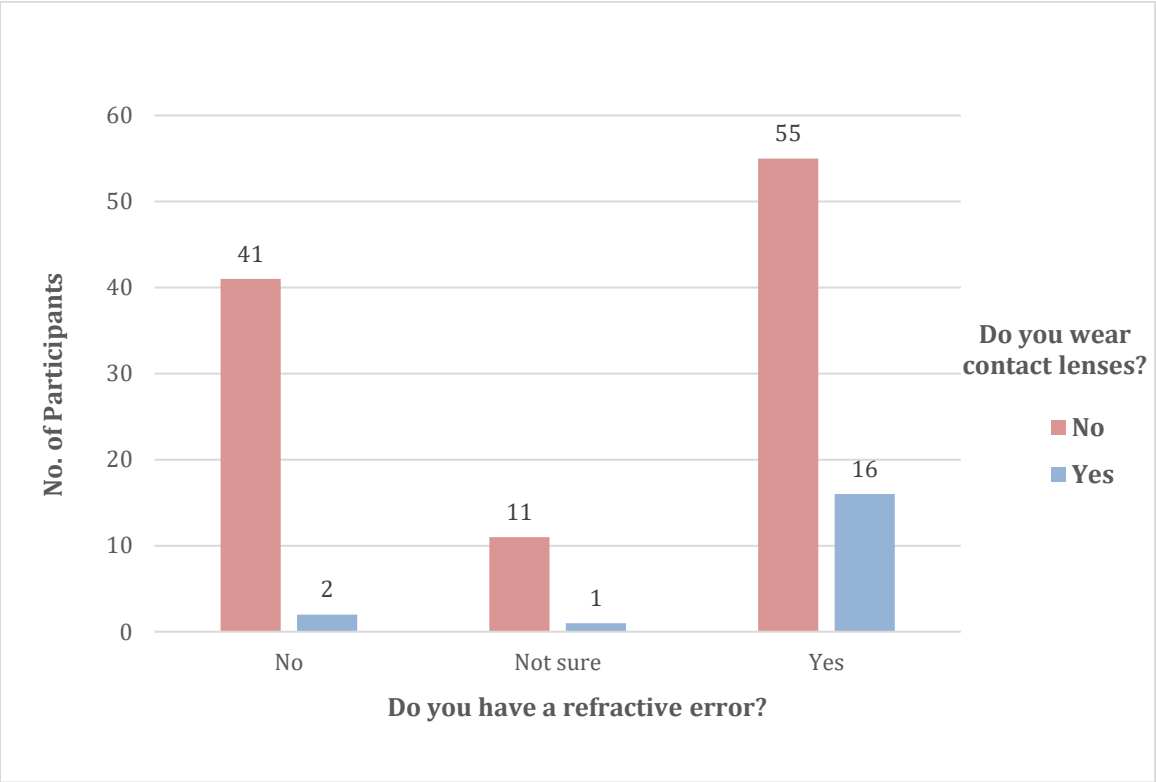

Figure 4: Bar Graph showing use of contacts amongst athletes with respect to presence of a refractive error.

Contact Lens Use regarding Age and Gender

The majority of contact lens users amongst athletes were found to be females in one and only age group, 18-24 years. Male athletes who wear contact lenses were more inclusive of the various age than female athletes, with the most popular age group wearing contact lenses being 18-24 years and the least common being 55-64 years.

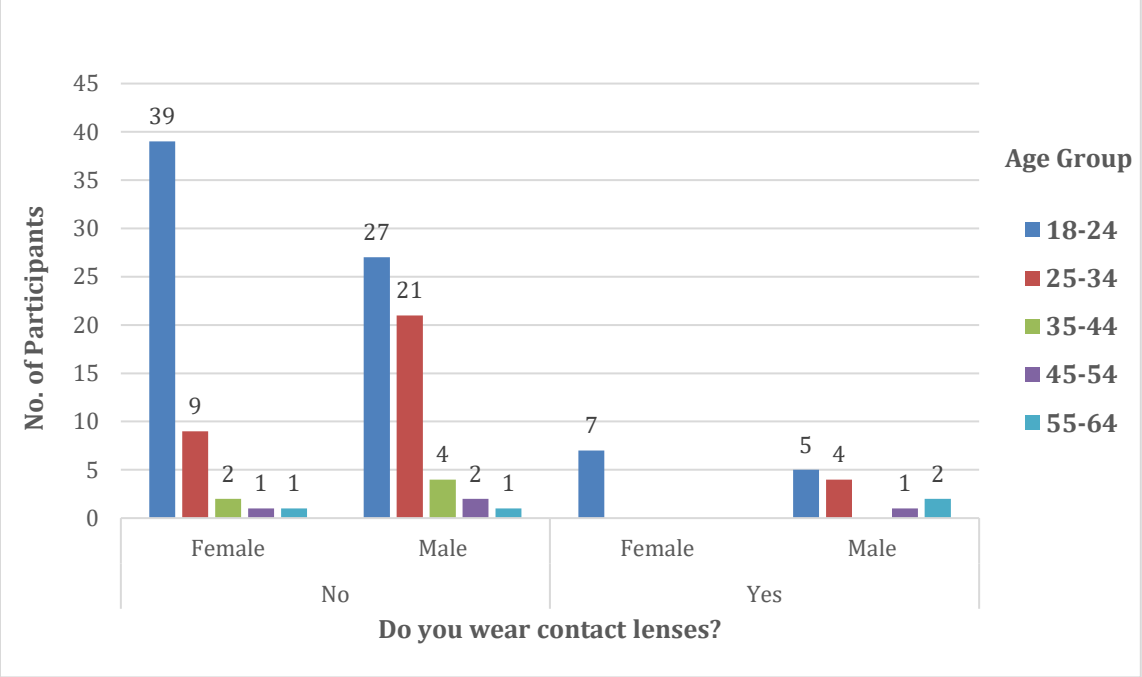

Figure 5: Bar Graph showing Total use of contact lenses with respect to age and gender.

Use of Contact Lenses

According to the research, most athletes who wear contact lenses mainly play a combination of different sports followed by football, cycling, volleyball, cricket and netball. It was found that athletes who compete in track and field do not wear contact lenses.

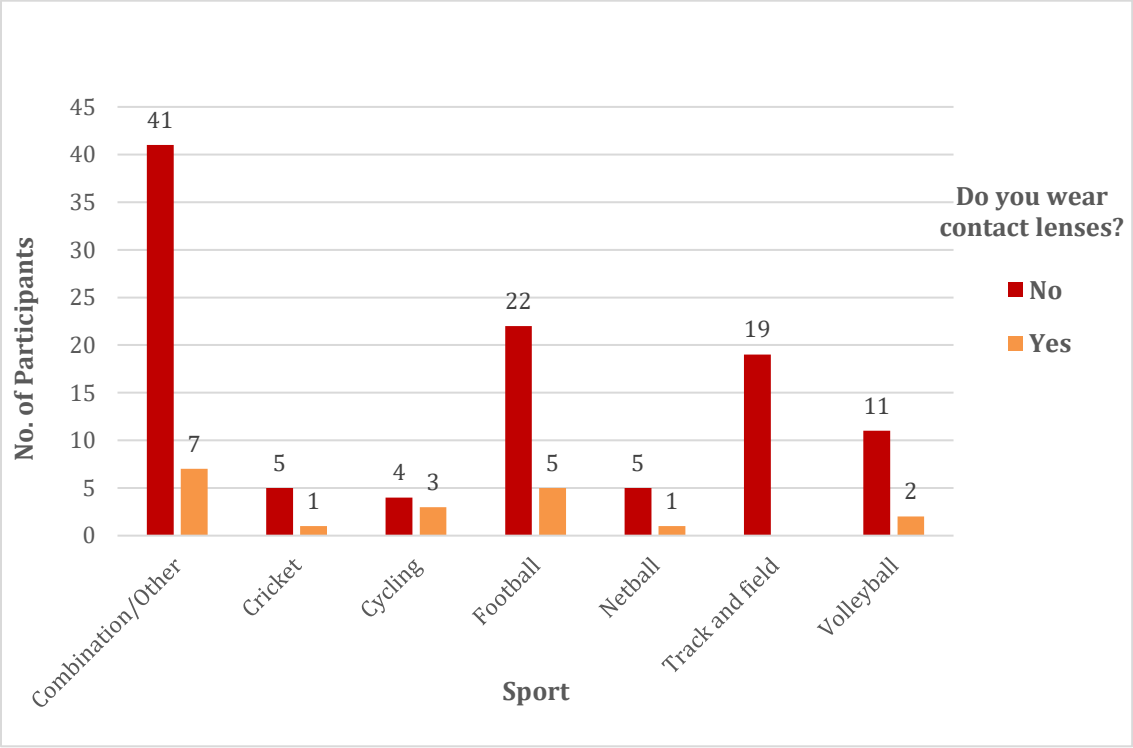

Figure 6: Bar Graph showing Total use of contact lenses amongst athletes with respect to Type of Sport.

Modality and Duration of Contact Lens Use

Contact lens related eye problems occurred mainly in athletes who wear reusable contact lenses for more than 12 hours followed by 5-6 hours daily. While some athletes in this study had eye problems when using daily disposable lenses, the majority of athletes had no such issues as opposed to those who used reusable lenses.

Figure 7: Bar Graph showing type of contact lenses amongst athletes with respect to wear time and occurrence of contact lens complications.

Preference of Athletes

Contact lenses was considered to be a better alternative to glasses by a higher proportion of athletes who do not wear them. A greater percentage of athletes who lean toward wearing contact lenses as compared to spectacles believe that they improve their sport performance.

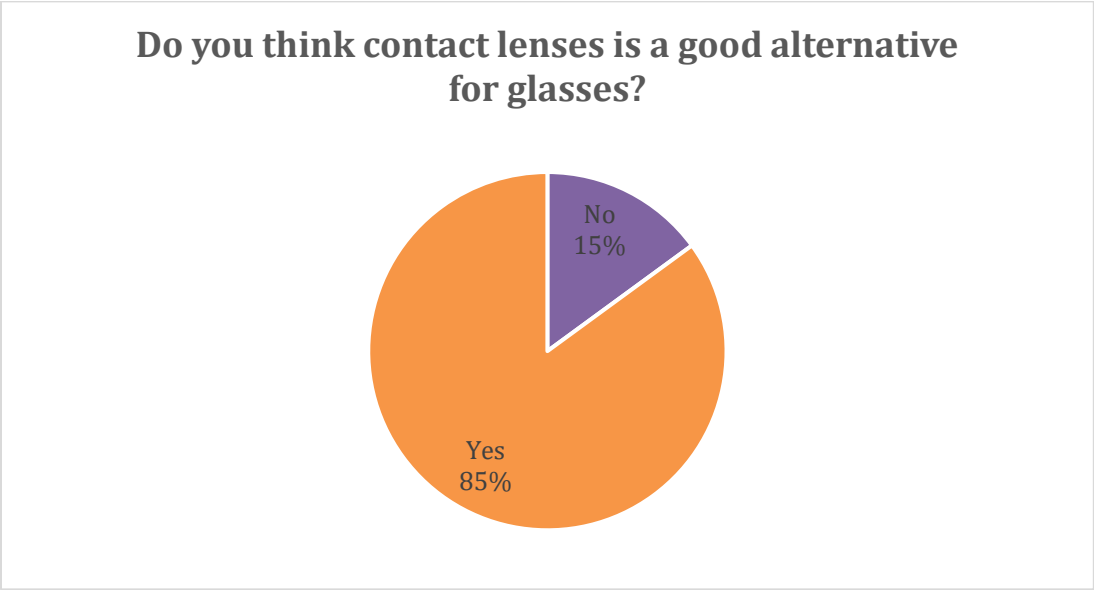

Figure 8: Pie Chart showing total for contact lens non-wearers' opinion of contact lenses.

A greater percentage of athletes who prefer wearing contact lenses compared to spectacles believe that the contact lenses improve their sport performance.

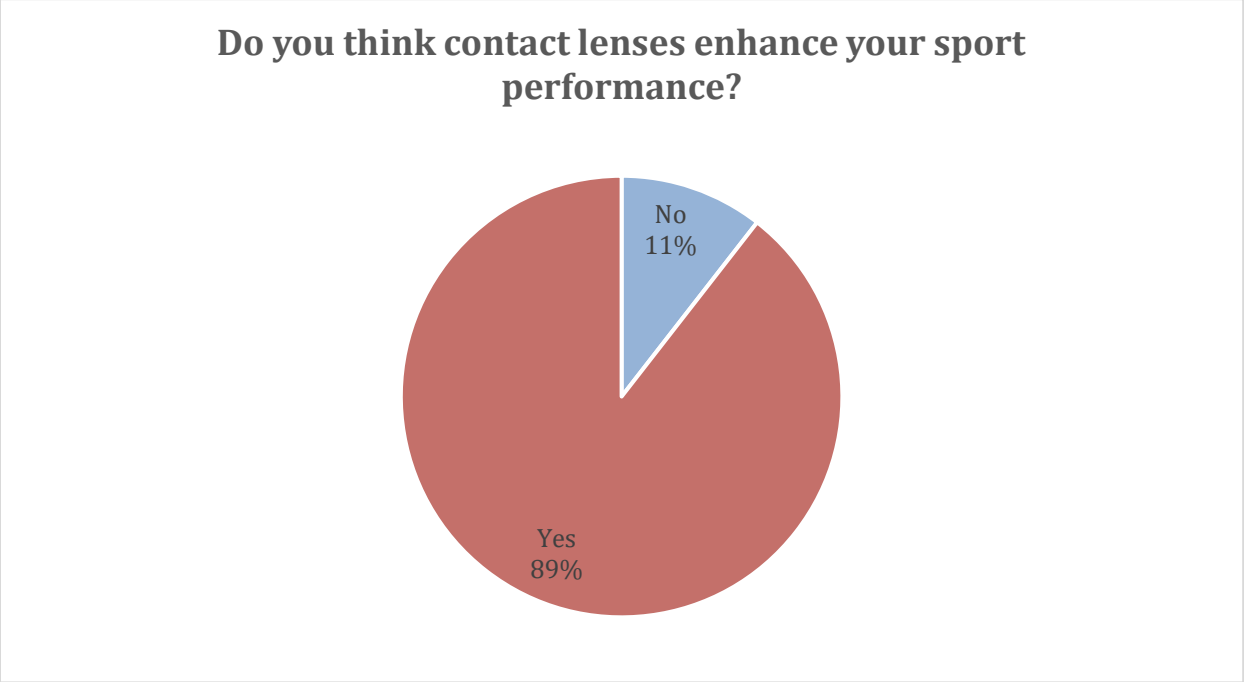

Figure 9: Pie Chart showing total contact lens wearers who prefer contact lenses over spectacles.

Participants communicated their eagerness to utilize photochromatic contact lenses which block ultraviolet radiation with the larger part being non-wearers who are intrigued.

There are less non-wearer athletes who are uninterested while just 1 contact lens wearer is not.

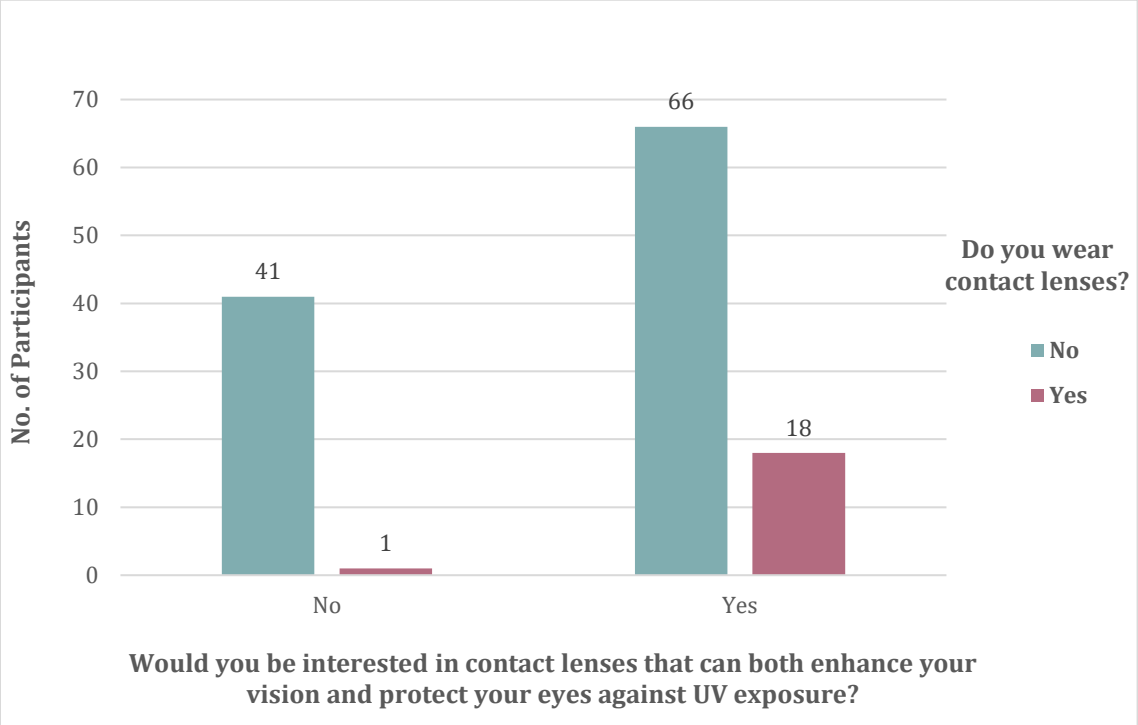

Figure 10: Bar Chart showing interest in photochromatic contact lenses amongst contact lens wearers and non-wearers.

5.1 Discussion

In this study, the aim was to examine the awareness, knowledge and attitude of athletes in Trinidad and Tobago towards contact lenses. This process involved gathering information from these athletes through questionnaires, structured with simple questions relevant to the objectives of the study. Questionnaires were distributed both online and in person to athletes of different sporting disciplines across Trinidad and Tobago. We also hope to make athletes more aware and educated on the topic of contact lenses so they would be more willing to try it and will be able to experience the many benefits of contact lenses in sport.

The population demographic shows that more females than males participated in the study, with the percentages being 53.2% and 46.8% respectively. In terms of occupation, the population was dominated by students, (48.4%). Other occupations included food preparation (7.1%), administrative (4.8%), teacher (4.0%), but no other exceeding 10% of the sample. Persons aged 18-24 years old dominated the study at 61.9%, followed by person's aged 25-34 years, 27%. This means that about 89% of the sample was between the ages of 18 and 34 years. The age with respect to gender which can be seen in figure 7 above, shows that most of the female participants were ages 18-24 while almost all the participants over 35 years were male. This was similar to a study done by Nick Fogt and Brennen Yaquinto, where the participants ranged in age from 22 to 37 years (3), however was contrary to the study done on the prevalence and risk factors for refractive error, where the mean age was 57.2 (7). , The type of sport in which each participant engaged showed that most participants indicated that they do a combination of sports (32.5%), with football (22.2%) and track and field (16.7%) following closely. Figure 8 shows a representation of the sports with respect to gender. And lastly, when asked for how long these participants have been

engaging in these sports, the most popular answer was more than 2 years, with 88.9% of the sample answering so.

Awareness

In terms of awareness and contact lens use, when participants were asked if they had a refractive error, 56.3% answered yes, 34.1% answered no and 9.5% of the participants were not sure if they had a refractive error. More than 150 million Americans have a refractive error (13), which is about 45% of the American population. However, the WHO states that 2.2 billion people globally have near or distant visual impairment (5), which is about 27% of the world's population. Specific to sport, a study titled "refractive error and vision in the general sport-playing population" showed that 38.2% of their sample had refractive error (29). The "not sure" option here gives an idea of the awareness of the awareness of the sample. It would expected that persons over the age of 18 years old would have at least had one eye exam in their lifetime and should know if they have problems with their vision or not.

When asked whether each participant wears spectacles or not, 61.9% answered yes while 38.1% answered no. This does not correspond with the previous question as we expect that if only 56.3% of the sample has refractive error then only that amount would be wearing spectacles. When asked whether or not each participant wears contact lenses, 15.1% answered yes while 84.9% answered no. This response rate can also be seen in a study titled "Patterns of use and knowledge about contact lens wear among teenagers in rural areas in Malaysia" where only 7.2% of the respondents were contact lens wearers, with 7.8% of these contact lens wearers using CLs for sport.(24). This means that of the spectacle wearers, only about 24.4% wear contact lenses. In figure 11, the results show that the prevalence of athletes who wear contact lenses is higher in the age group, 18 – 24, particularly amongst females. The study revealed that the prevalence of contact

lenses use amongst athletes with respect to sports is greater amongst those who play a combination of sports as compared to each individual sport. Athletes who play football have the second highest prevalence followed by cycling, volleyball, cricket and netball.

Patterns

With regard to patterns of contact lens use among athletes, the participants were asked a series of questions pertaining to contact lens use. This section was not applicable to 84.9% of the sample as they did not use contact lenses at all. Of the other 15.1%, when asked how often they wear contact lenses, the most popular answers among the sample were, “everyday” (5.6%) and “a few days a month” (3.2%), which is 36.8% and 21.1% of the contact lens wearers respectively. The length of time that most of the sample wore contact lenses was 5-6 hours per day (5.6%), (36.8% of contact lens wearers). When asked if they only wore contact lens for sport, 84.9% did not respond since this question was not applicable to them, 6.3% responded “yes” and 8.7% responded “no”. In terms of disposability, 7.9% of the sample used daily disposable contact lenses while 7.1% used reusable contact lenses.

In terms of contact lens related eye problems, 2.4% of the sample experienced these problems before while 12.7% had not. When asked if the participants think that contact lenses enhance their sport performance, 89.5% of contact lens wearers said that they do believe that contact lenses enhanced their performance in sport while 10.5% thought that it did not. And finally when asked if the participants prefer contact lenses or spectacles , 100% of contacts lens wearers preferred contact lens over spectacles. Comparing these results with those collected by Mohd-Ali and Tan, which stated that daily wear soft CLs seemed to be the preferred modality and approximately 75% of their population wore CLs 8-10 hours daily (24) we can see that the result was quite similar however with for our sample, while most participants did indeed wear their

contact lenses daily, the preferred wear time was 5-6 hours per day. Another study which looked at the patterns of contact lens use among university students in Thailand showed that of the 336 contact lens users, all used soft contact lenses with most participants wearing their lenses 5 days a week for 8-12 hours per day (30). This too shows that the wear time in our study was slightly lower than that of other studies in different part of the world. The reason for this can be one of many including but not limited to discomfort of contact lenses.

The duration of contact lens wear was also found to be significantly associated with patterns and problems related to contact lens use. In addition, the association of frequency of contact lens wear and type used was found to be statistically significant. It was found that athletes wearing reusable contact lenses for more than 12 hours each day were more prone to contact lens related eye problems than athletes wearing daily disposable contact lenses. (Figure 13) It is known that contact lens use changes the structure of the cornea causing it to become more sensitive, hence, longer hours of contact lens use causes more symptoms. Figure 14 shows the majority of non-contact lens wearers think that contact lenses is a good alternative for glasses and figure 15 indicated that the greater quantity of contact lens wearers prefer contact lenses over glasses representing that contact lenses indeed meets the needs for an athletic lifestyle.

Barriers

When looking at the barriers to contact lens use, we must assess the reason why so many persons are not interested in contact lens use. Some of these options include cost, inconvenience, hygiene concerns, lack of education, and people thinking that they have no need for contact lenses. Of these options, the most popular among this sample was “no need to wear contact lenses” (36.5%), according to the responses of our participants. “No need for contact lenses was one of the main barriers to contact lens use which again speaks of the lack of awareness of the benefits of

contact lenses especially for sport persons. One of the main advantages of contact lenses is that it is excellent for sports, athletics and physical activity (9) while providing a weight free experience, a wider field of view, no obstruction of the frame and having a wide variety of lenses on the market which makes it possible to fit almost anyone with contact lenses (9). This show that there is a great need for any sport person who already wears spectacles to use contact lenses.

However, if they are not properly educated on these benefits then they may be forced to think otherwise. Another reason why a person may be opposed to contact lens use is the risk of infection and other contact lens related problems but as seen above, only 2.4% of the sample indicated that they have experienced contact lens related eye problems before. Alex Hui, in an article titled “where have all the contact lens wearers gone” states that some of the factors that prevent increase in contact lens wearers are, discomfort, access to eye care, limited lens options available for person who do not fit the average readymade soft contact lens, patient demographics such as age, access to materials for contact lens production and the impact of the modality (6). These reasons were contrary to those given by our population as this sample was more concerned about the need for contact lenses rather than the mechanics behind contact lens wear.

Most non-contact lens wearers do not wear contact lenses because they do not have a refractive error (36.5%). This was non-applicable to contact lens wearers. In this study, It was found that 12.7%, 8.7%, 4% and 3.3% of the athletes do not wear contact lenses due to lack of education, inconvenience, cost and hygienic concerns respectively.

5.2 Conclusion

The level of awareness of contact lenses among the athletes of Trinidad and Tobago was four f to be very low. Of the total population, 56.3% (71) had refractive error, 61.9% (78) wore spectacles, but only 15.1% (19) wore contact lenses. The most popular reason for not trying contact lenses among the sample was because they did not think that they have a need for contact lenses, even though 88.1% (111) of the population thought that contact lenses was a good alternative for spectacles. The most common pattern of contact lens use among the sample was daily disposable contact lenses, every day for 5-6 hours per day. Athletes need to be properly educated on the benefits of contact lenses in sport in order to overcome the barriers preventing athletes from taking advantage of contact lens use.

5.3 Recommendation

We recommend that in further studies, athletes under the age of 18 should also be included and data collection for the research should be conducted for a longer time period to be able to access a wider range and increased number of athletes. This proved to be a limitation in this study due to the additional resources, ethical, and governance issues it would have entailed, hence, we apologetically concluded that this would not be feasible for this study. Factors that should also be taken into consideration for future research in order to get a more in-depth analysis as to why participants do or do not wear contacts are the type of lenses used whether it is soft or hard, the brand, how often participants visit the optometrist to assess their eyes.

In addition, we recommend strategies to increase the awareness and promote healthy contact lens wear and care amongst athletes. This includes ophthalmic practices/businesses advertising the advantages of contacts with respect to sports vision and performance through

website features, videos, posters, infographics, radio station podcasts, social media platforms, and in-clinic advice from the Optometrists themselves. A thorough investigation into the dates and times of sporting events can be done so that contact lens promotional advertising can be coordinated with the peak times of sports competitions and events annually.

As contact lenses continue to evolve with the production of new materials, modalities, and tints, feedback from patients as well as optometrists will assist in the growth of the contact lens industry and increase the amount of contact lens wearers nationally. Therefore, it is important for Optometrists to appropriately advise and correctly fit contact lenses specific to the needs for athletic patients in order to ensure patient satisfaction and develop the ophthalmic practice, for example, the first-ever transition or photochromic contact lenses, Acuvue Oasys with Transitions can be advertised/offered to athletes as they offer UV protection. Education, communication, and behavioral modifications are important factors that help to improve the compliance level towards, hence, as primary eye care providers, Optometrists should strongly promote and continuously educate all patients who are athletes about contact lenses.

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Appendices

THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE, TRINIDAD AND TOBAGO, WEST INDIES
CAMPUS RESEARCH ETHICS COMMITTEE
TELEPHONE: (1-868) 662-2002 ext. 82755 E-mail: campusethics@sta.uwi.edu

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CONSENT TO PARTICIPATE IN RESEARCH

Complete Protocol Title: Awareness and use of contact lenses in Sports in Trinidad and Tobago
Principal Investigator: Dr. Kingsley Ekemiri

Co Investigator(s): Tamara Bruce, Rickila Isaac, , , , , , , ,

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Identification of project

a. **What is the purpose of this research?**
The purpose of this research is to examine your awareness, knowledge and attitude towards contact lenses and your use of protection against UV exposure.

b. **How long it will take to complete this project?**The project will be carried out over a span of four months.

c. **Why am I selected for this research?**
You were chosen for this research because you are a sportsperson in Trinidad and Tobago. You have been selected because we want to know how aware you are about the use of contact lenses in sports.

d. **Why is this document for obtaining informed consent important?**
Informed consent is important and needs to be ensured by explaining and informing the participant about the purpose of this project. Your participation is voluntary and you can

withdraw from the study at any time if you choose not to partake. However, once you choose to complete the survey this would indicate informed consent.

Description of Procedures

a. **What am I expected to do in this study?**
Once you agree to participate in this study, you will be expected to complete an authorized questionnaire where your information will be collected anonymously.

b. **Which procedures are investigational, which are routine? What is the expected duration, how frequently I have toparticipate and where will the activities take place?**
There will be no eye-procedures of any kind to be performed on you. You are only required to complete the questionnaire which contains a mixture of open-ended and closed-ended questions relating to your social demographics, your pattern of use of contact lenses and the issues you have towards them. . The duration to complete the survey is approximately ten minutes.

c. **How many participants are involved in the study approximately?**Approximately, 306 participants are involved in the study.

Risks and Discomforts

a. **What are the risks or discomforts that may result from my participation in the study?**There are no risks or discomfort that may result from your participation in the study.

b. **What help and treatments are available if any adverse reactions occur? How can I access them? Is there any**
compensation available if serious adverse effects occur?
N/A

c. **Are there any potentially beneficial treatments or procedures that are withheld for the purpose of the study?**N/A

Termination of Research

a. Are there any anticipated circumstances under which the study/participation may be terminated by the researchers without regard my consent?
The study may be terminated if the Ethics Committee cancels the approval. However, your consent will be regarded and you will be notified if such changes occur.

Benefits

a. What are the benefits to me (and the wider society) by this study?
By participating in this study, your time and contribution will help in understanding the awareness, knowledge and attitude of athletes towards contact lenses and their use of protection against UV exposure.

Alternatives

a. **Does this study involve more than minimal risk? Are there any appropriate alternative procedures or courses oftreatment that might be advantageous to me?** This study does not involve more than minimal risk.

b. **Do I have the right to pursue the alternatives?**N/A

Confidentiality

a. How will confidentiality be maintained regarding my data? Who will have access to the data, how the data will be reported and /or published?
The anonymity of personal information will be ensured and there will be the maintenance of privacy and confidentiality of the data obtained from each participant. The study will be stored for 5 years in the research supervisor's office in a password-protected system and will not be reported and published.

Cost and Payments

a. Are there any costs involved and are there any compensations provided? There are no costs involved or compensations provided.

Freedom to Withdraw

a. **Do I have the freedom to withdraw from the study anytime?**
You are allowed to withdraw from this study at any time, without having to provide a reason why and will be allowed to do so without consequences.

b. **Will withdrawing from the study have any impact on my treatment?**N/A

Opportunity to ask questions

a. Do I have to right to ask questions anytime during the study? Whom should I contact?
You have the right to ask questions anytime during the study. You can contact the following persons if you have any inquiries:
Research Student, Rickila Isaac at rickila.isaac@my.uwi.edu Research Student, Tamara Bruce at tamara.bruce@my.uwi.edu
Research Supervisor, Dr. Kingsley Ekemiri at kingsley.ekemiri@my.uwi.edu. Campus Research Ethics Committee, St. Augustine UWI at campusethics@sta.uwi.edu

CONSENT

I have read and understood this explanation. The researcher has also explained the study to me. I have had a chance to ask questions and have them answered to my satisfaction. I agree to take part in this study. I have not been forced or made to feel like I had to take part.
By signing this document, I agree that I have read and received a copy of this document.

I must sign this Consent Form. I will be given a signed copy of the form to keep.
Print Name of Subject

_____

Signature of Subject Date

_____ _____

INVESTIGATOR'S STATEMENT AND SIGNATURE
I have explained the purpose of the research, the study procedures, including those that are investigational, the possible risks and discomforts, and the potential benefits, and have answered all questions regarding the study to the best of my ability. In my opinion, the participant understands these issues and has voluntarily agreed to participate in the study.

Signature of Person conducting the informed consent discussion Date

_____ _____

Role of person named above in the research project

_____

Signature of Second Witness Date

_____ _____

By Chairman:

This document was approved by Campus Ethics Committee on:
January, 22 2021
This document expires on:
January, 22 2022

Attachment 1: Consent Form

THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE, TRINIDAD AND TOBAGO, WEST INDIES
CAMPUS RESEARCH ETHICS COMMITTEE
TELEPHONE: (1-868) 662-2002 ext. 82755 E-mail: campusethics@sta.uwi.edu

January, 22 2021

Dr. Kingsley Ekemiri
Tamara Bruce, Rickila Isaac
Optometry Unit, Department of Clinical Surgical Sciences, Faculty of Medical Sciences, The University of the West Indies, St Augustine Campus, Trinidad W.I
Email: kingsley.ekemiri@my.uwi.edu

Dear Dr. Kingsley Ekemiri,

Ref: CREC-SA.0711/01/2021

Title: Awareness and use of contact lenses in Sports in Trinidad and Tobago

I am pleased to advise that your application for research on the above captioned topic has met the criteria for Exemption from Review from the Campus Research Ethics Committee, St. Augustine. Sincerely,

Professor Jerome De Lisle
Chair
Campus Research Ethics Committee

Attachment 2: Exemption Letter

Questionnaire

Section I: Demographics

1. In what age group are you?

- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 - 44
- ☐ 45 - 54
- ☐ 55 - 64
- ☐ 65 - 74
- ☐ 75 +

2. Gender

- ☐ Male
- ☐ Female

3. Which of the following best describes your current occupation?

- ☐ Student
- ☐ Administrative Assistant
- ☐ Healthcare Practitioner
- ☐ Secretary
- ☐ Teacher
- ☐ Manager
- ☐ Food Preparation
- ☐ Architecture and Engineering
- ☐ Sales
- ☐ Construction
- ☐ Community and Social Service
- ☐ Other, please specify: _____

4. What sporting activity do you engage in?

- ☐ Football
- ☐ Track and Field
- ☐ Netball
- ☐ Cycling
- ☐ Other, please specify: _____

5. How long have you been doing this sport?

- ☐ Less than 6 months
- ☐ 6 months - 1 year
- ☐ 1 - 2 years
- ☐ More than 2 years

Section II: Awareness of Contact Lens Use

6. Do you have a refractive error? (Do you have problems with your vision?)

- ☐ Yes
- ☐ No

7. Do you wear spectacles/glasses?

- ☐ Yes
- ☐ No

8. Do you wear contact lenses?

- ☐ Yes
- ☐ No

Section III: Patterns of Contact Lens Use

9. How often do you wear contact lenses?

- ☐ Everyday
- ☐ A few times a week
- ☐ Once a week
- ☐ A few times a month
- ☐ Once a month
- ☐ Other, please specify: _____

10. How many hours do you wear your contact lenses?

- ☐ 4 or fewer hours
- ☐ About 5-6 hours
- ☐ About 7-8 hours
- ☐ About 9-12 hours
- ☐ More than 12 hours

11. Do you only wear contact lenses for sports?

- ☐ Yes
- ☐ No

12. What type of contact lenses do you wear?

- ☐ Daily Disposable
- ☐ Reusable

13. Have you ever had a contact lens-related eye problem?

- ☐ Yes
- ☐ No

14. Do contact lenses enhance your sports performance?

- ☐ Yes
- ☐ No

15. Do you prefer contact lenses or spectacles?

- ☐ Contact lenses
- ☐ Spectacles

16. Why have you never tried contact lenses?

- ☐ Cost
- ☐ Inconvenience
- ☐ Hygiene concerns
- ☐ Not educated enough about contact lenses use
- ☐ No need to wear contact lenses
- ☐ Other, please specify: _____

Section IV: Barriers to Contact Lens Use

17. Do you think contact lenses is a good alternative for glasses?

- ☐ Yes
- ☐ No

18. Do you usually use any protective eyewear against UV exposure?

- ☐ Yes
- ☐ No

19. What method do you find the most effective?

- ☐ Sunglasses
- ☐ Hats
- ☐ Other, please specify: _____

20. Would you be interested in a contact lens that can both enhance your vision and protect your eyes against UV exposure?

☐ Yes

☐ No

The End. Thank you for your participation.

Attachment 3: Questionnaire