

Assessing cardiorespiratory fitness of young male sports players

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Assessing cardiorespiratory fitness of young male sports players.

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DECLARATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study. I bound to take written consent of my supervisor and Head of the Physiotherapy Department, SCMST.

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CONTENT

	Contents	Page no.
	Cover page/Title page	
	Submission page	
	Declaration page	i
	Acknowledgements	ii
	List of content	iii
	List of figures	iv
	List of tables	v
	Abbreviations	vi
	Abstract	vii
1	Chapter I: Introduction	1-12
1.1	Background	1
1.2	Justification	4
1.3	Research question	5
1.4	Aims	6
1.5	Objectives	7
1.5.1	General Objective	7
1.5.2	Specific Objectives	7
1.6	Conceptual framework	8
1.7	Operational definition	9
2	Chapter II: Literature review	13
3	Chapter III: Methodology	19-21

3.1	Study Design	19
3.2	Study population	19
3.3	Study Area	19
3.4	Sample Size	19
3.5	Sampling procedure	20
3.6	Data Collection Tools	20
3.7	Data Analysis	20
3.8	Inclusion & exclusion criteria	20
3.8.1	Inclusion Criteria	20
3.8.2	Exclusion Criteria	20
3.9	Ethical Consideration	21
3.10	Limitation of study	21
3.11	Budget	21
4	Chapter IV: Results	22-53
5	Chapter V: Discussion	54-57
6	Chapter VI: Conclusion and Recommendation	58
6.1	Conclusion	58
6.2	Recommendation	58
7	References	59-60
8	Chapter VII: Annexure	61-79
8.1	Consent form (English)	61
8.2	Consent form (Bangla)	62
8.3	Questionnaire (English)	63
8.4	Questionnaire (Bangla)	70
8.5	Permission Letter from SCMST	78
8.6	Permission Letter from BKSP	79

9	Gant chart	80
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LIST OF FIGURES

No	Figures title	Page no
1	Education level of the participant	24
2	Family type of the participant:	25
3	Sports role of the participants	27
4	Mostly suffered from injury types	31
5	Taking sports drink during match play	34
6	Breathing difficulty during warm up	38
7	Felt chest pain during cool down	43
8	Consult with physiotherapist	46

LIST OF TABLES

Serial no	Table name	Page no
1	Age of the participants	22
2	Area of the participant	23
3	Religion of the participant	26
4	Playing duration of the players	28
7	Playing duration of the players	29
6	Date of last injury	30
7	Feeling chest pain during match play	32
8	Suffered from last injury type is given below	33
9	Suffering from any cardiac disease	35
10	Feeling oxygen deficiency during match play	36
11	Warm up time	37
12	Pulse rate during warm up	39
13	Feeling chest pain during warm up	40
14	Pulse rate during cool down	41
15	Respiratory rate during cool down	42
16	Feeling musculoskeletal pain after finishing matches	44
17	Consult with doctor	45
18	Relation between age of the participants and their sports role	47

19	Relation between sports role and mostly suffered from injury types	48
20	Relation between wearing jackets and respiratory difficulty during cool down	49
21	Relation between mostly suffered injury type and warm up time	50
22	Relation between musculoskeletal pain and consultation with physiotherapist	51
23	Relation between sports role and chest pain after finish main event	52

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ACRONYMS

BKSP:	Bangladesh Krira Sikkha Protisthan
BMI:	Body Mass Index
ROM:	Range of Motion
SPSS:	Statistical Package of the Social Sciences
BMRC:	Bangladesh Medical Research Council
IBM:	Institutional Review Board
SCMST:	Saic College of Medical Science and Technology
ACL	Anterior cruciate ligament
PCL	Posterior cruciate ligament
BPM	Breath per minute (respiratory rate)
BPM	Beats per minute (pulse rate)

ABSTRACT

Purpose: To evaluate the prevalence of sports injuries and weaknesses among male athletes by assessing cardiorespiratory fitness. **Objective:** To explore the Socio-demographic information of the participants. To disclose the participants training duration and sporting event. To identify the common site of injury. To determine the cardiorespiratory rate of sports players. To identify individual strengths and weaknesses. **Methodology:** A quantitative cross-sectional study design was chosen to achieve the objectives of the study. 228 subjects were selected through convenience sampling technique from the male athletes who trained in BKSP by using a structural questionnaire to collect data. **Result:** The result of the study demonstrates that, the peak age group was 14 (228 subjects, 27% in total subject). The most frequent sports were cricket 28.9% (n=66) and also found who trained in BKSP is volleyball 10.1%(n=23). The end result also indicates most commonly injured player was musculoskeletal related 52.6% (n=120), The prevalence of chest pain during match play 5.3% (n=12). Respiratory rate during cooldown was normal 68% (n=155) and pulse rate was 69.7 % (n=159) at less than or equal 72 beat per minute, which is also considered as normal. Among the participant 100% (n=228) were regularly attend in warm up and cool down activity and the duration of warm up and cool down 97.4% (n=222) more than or equal 16 min. Pulse rate during warm up was 99.6% (n=227) less than or equal 72. The finding also reflects that the treatment was consisting physiotherapy as frequent as drug (91.2% n=208 taken physiotherapy, 73.2% n=167 are consulted with doctors). This researcher found that there is strong association between age of the participants and their sports role (p=0.00) among 228 players. Whether there is 28.39% were cricketer. Also found another association between wearing jackets and respiratory difficulty during cool down (p=0.011). Among 228 players 56.1% players were felt pain after finished main event also most of the participant were consulted with physiotherapist (91.20%) (p=0.7). **Conclusion:** The participated peak age 14 and highest age is 24. Frequent injury occurring among athletes and noticeably breathing difficulty during cool-down and overuse are the key issues to cause of injury. Health education and perform regular physical activity along with physio therapeutic exercises can prevent injury.

Keywords: Prevalence, Sports Injury, Male Athletes.

1.1 Background:

Physical exercise is an important component of a healthy lifestyle for every generation of the people as well as fulfilling the natural human need for physical activity. However, special care should be given to young athletes when they take part in strenuous physical training in order to ensure their proper physical development. Cardiorespiratory fitness refers to the ability of the circulatory and respiratory system to supply oxygen to skeletal muscle during sustained physical activity (J. & H, 2003). Regular exercise makes these systems more efficient by enlarging heart muscle, enabling more blood to be pumped with each stroke, and increasing the number small arteries in trained skeletal muscle, which supply more blood to working muscle. Exercise improves not just the respiratory system but the heart by increasing the amount of oxygen that is inhaled and distributed to the body tissue. Cardiorespiratory fitness helps improve lung and heart condition, and increase feeling of wellbeing (Kylasov A, 2011).

The cardiovascular system responds to changing demands on the body by adjusting cardiac output, blood flow and blood pressure. Cardiac output is defined as the product of heart rate and stroke volume which represents the volume of blood being pumped by the heart each minute. Cardiac output increases during physical activity due to an increase in both the heart rate and stroke volume. At the beginning of exercise, the cardiovascular adaptation is very rapid, within a second after muscular contraction there is a withdrawal of vagal outflow to the heart, which is followed by an increase in sympathetic stimulation of the heart. This result in an increase in cardiac output to ensure that blood flow to the muscle is matched to the metabolic needs. Both heart rate and stroke volume vary directly with the intensity of the exercised performed and many improvements can be made through continuous training. Another important issue is the regulation of blood flow during exercise. Blood flow must increase in order to provide the working muscle with more oxygenated blood which can be accomplished through neural and chemical regulation. Blood vessels are under sympathetic tone; therefore, the release of noradrenaline and adrenaline will cause vasoconstriction of non-essential tissues such as the liver, intestines, and kidneys, and decrease neurotransmitter release to the active muscles

promoting vasodilatation. Also, chemical factors such as a decrease in oxygen concentration and an increase in carbon dioxide or lactic acid concentration in the blood promote vasodilatation to increase blood flow. As a result of increased vascular resistance, blood pressure rises throughout exercise and stimulates baroreceptors in the carotid arteries and aortic arch. These pressure receptors are important since they regulate arterial blood pressure around an elevated systemic pressure during exercise.

Although all of the described adaptations in the body to maintain homeostatic balance during exercise are very important, the most essential factor is the involvement of the respiratory system. The respiratory system allows for the proper exchange and transport of gases to and from the lungs while being able to control the ventilation rate through neural and chemical impulses. In addition, the body is able to efficiently use the three energy systems which include the phosphagen system, the glycolytic system, and the oxidative system.

Bangladesh Games is the largest domestic multi-sport tournament in Bangladesh where athletes and sports teams from all the districts of Bangladesh participate. Initiated in 1978, the event went into a hiatus after being held for the 7th time in 2002 but was restored after almost 11 years in 2013 (games, 2013). Sports in Bangladesh is a popular form of entertainment as well as an essential part of Bangladeshi culture. Cricket is the most popular sport in Bangladesh. Kabaddi is the nation sport of Bangladesh. Bangladesh is one of the top 10 cricketing nation of the world and have regularly qualified for world cup, the country achieved arguably their greatest heights in cricket. There are lots of sports found in Bangladesh, such as football, cricket, hockey, volleyball, handball, golf etc. are more popular among the urban folks.

There is a lots of risk factors related to the cardiorespiratory system, such as cancer, respiratory disorder, diabetes, stroke, hypertension and obesity etc. The purpose of the study helps to determine the risk factors and make aware sports players to reduce them. Furthermore, the study helps to reduce injury tendency of every sports players and effect on players related to this study also. Injuries are the major threats to all the athletes of the world. As we notice in daily newspaper sports injury causes great suffering both the male and female athletes all over the world (Shadanfar, 2011). Many great athletes were unable to participate in the great event because of being injured, we see in the world athlete history.

This problem is more acute among Bangladeshi athletes (Hawkins & Fullar, 2006). World population has increased in a great number, popularity of popular games also increased, as a result more and more people are becoming interested in athletics of sports. The number of sports institutes are growing, they are arranging frequent sport event. Before participating in a sport event participant requires heavy training; during this training session, and while they participate, this sport athletes starts realizing the necessity of physiotherapy to overcome the injury and keep body fit for the games (Pecina & Bojanic, 2007).

1.2 Justification of the study:

Physical exercise is an important component of a healthy lifestyle for every generation of the people and sports players as well as fulfilling the natural human need for physical activity. This study conducts about player sociodemographic information such as players age, living area, religion and family status. Also expose their playing styles, roles, players information, last injury time, cardiac related problem and some significant question related to the cardiovascular fitness. This study will help to find out players weaknesses and most common injury site as well. The focused of this study to identify the musculoskeletal and cardiovascular issues. Furthermore, this will help to get succeed in the match play and obviously it will help to find out the young stars. BKSP is the highly acceptable sports area in Bangladesh where researcher can find out a lot of sports players and also find out their problems to improve fitness and reduce injury tendency as well.

Injury to the athletic trainees is common and most of the time these are over look by the training authority. The purpose of this study is to evaluate the importance of warm up and cool down through various exercises activity for male athlete in Bangladesh which may enhance the athletic performance during main event.

1.3 Research question:

What are the assessment of cardiorespiratory fitness of the sports players?

1.4 Aims:

The aim of this study is to evaluate and assessing cardiorespiratory fitness of the sports players.

1.5 Objectives:

General objective:

To explore cardiorespiratory fitness of sports players through assessing.

Specific objective:

To explore the Socio-demographic information of the participants

To disclose the participants training duration and sporting event.

To identify the common site of injury.

To determine the cardiorespiratory rate of sports players.

To identify individual strengths and weaknesses.

1.6 List of Variables

Conceptual framework

Independent variable

Sociodemographic

Respiratory rate

Pulse rate

Duration of play

Musculoskeletal pain

Dependent variable

Cardiorespiratory fitness

1.7 Operational definition:

Assessment:

The action of assessing someone or something.

Cardiovascular system:

The system that circulates blood and lymph through the body, consisting of the heart, blood vessels, blood, lymph, and the lymphatic vessels and glands.

Cardiorespiratory fitness:

Cardiorespiratory fitness refers to the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity.

Respiratory rate: In this research there is 3 categories has been found regarding respiratory rate. There are, below 12 breaths per minute is considered as low respiration, then 12 to 25 breaths per minute is normal and above 25 breaths per minute considered as higher value of respiration.

Pulse rate: In this study also indicates 3 categories of pulse rate, which is below 60 beats per minute considered as low pulse rate, 60 beats per minute to 100 beats per minute is normal and above 100 beats per minute indicates higher rate of pulse rate.

Musculoskeletal pain: Musculoskeletal pain refers to pain in the muscles, bones, ligaments, tendons, and nerves. Players can feel this pain in just one area of the body, such as back. It can also have it throughout the whole body.

Warm up: The warming up is a preparation for physical exertion or a performance by exercising or practicing gently beforehand. Warming up is performed before a performance or practice. Athletes, singers, actors and others warm up before stressing their muscles. It prepares the muscles for vigorous actions.

Warm up time: Most warm up sessions last between 20 minutes and half an hour; this gives the body plenty of time to gradually get ready for physical activity and gives the player time to prepare themselves mentally.

Cool down: Cooling down is an easy exercise, done after a more intense activity, to allow the body to gradually transition to a resting or near-resting state. Depending on the intensity of the exercise, cooling down can involve a slow jog or walk

Jumping jacks: A jump done from a standing position with the arms and legs pointing outwards.

Side shuffle: The side shuffle can be performed as part of a dynamic warm up to raise your heart rate, warm up the body and improve your flexibility.

Arm circle: Arm circles are often used as a warm-up exercise before engaging in static stretching, or more strenuous exercise, such as strength training.

Back pedaling: to retard the forward motion by pressing backward on the pedal, especially by stepping rapidly backward.

Walking knee hugs: Walking knee hugs are a variation to walking high kicks and walking high knees. This exercise will improve hip mobility while increasing flexibility in the glutes and hamstrings. Kick one knee up, bringing it as high as comfortable. Grasp it with both hands and gently pull it up slightly higher, hugging it to the body.

Squats: A squat is a strength exercise in which the trainee lowers their hips from a standing position and then stands back up. The primary agonist muscles used during the squat are the quadriceps femoris, the adductor magnus, and the gluteus maximus.

Leg swing: Forward Leg Swings: Brace the body against a wall or other support by holding one arm out to the side at shoulder height. Start with both feet directly under the hips and then swing the inside leg forward and backward. Gradually increase the range of motion until the leg swings as high as it will comfortably go.

Jogging: Jogging is a form of trotting or running at a slow or leisurely pace. The main intention is to increase physical fitness with less stress on the body than from faster running but more than walking, or to maintain a steady speed for longer periods of time.

Sports drinks: Sports drinks are beverages whose stated purpose is to help athletes replace water, electrolytes, and energy before and after training or competition. Generally, sports drinks contain two-thirds the amount of sugar found in a normal soda. The sugar found in sports drinks still exceeds the recommended amount of sugar in a day for a child. Sports drinks advertise the electrolytes they contain, but the electrolytes do not matter if the body is already receiving the electrolyte from good nutrition. The purpose of electrolytes is to replenish the body with ions to carry throughout the body for muscle contractions and nerve impulses. Electrolytes are also a scientific term for "salts" and water is a better carrier for salts than any other liquid, so the effectiveness of what sports drinks advertise is unnecessary for normal bodily functions and may cause harm due to the high sugar content.

Chest pain: In athletes the most common cardiac cause of chest pain is angina. Angina is caused by reduced blood flow to the heart muscle as a result of coronary artery disease. The pain is often experienced with exercise and eases up with rest.

Sports injury: Sports injuries are injuries that occur when engaging in sports or exercise. Bruises, strains, sprains, tears, and broken bones can result from sports injuries. Soft tissues like muscles, ligaments, tendons, fascia, and bursae may be affected. Traumatic brain injury is another potential type of sports injury.

Bones related injuries: These are the common injury can be seen in sports

Ankle sprain.

Groin pulls.

Hamstring strain.

Shin splints.

Knee injury: ACL tear.

Knee injury: Patellofemoral syndrome — injury resulting from the repetitive movement of your kneecap against your thigh bone.

Tennis elbow (epicondylitis).

The researcher took part in the title ‘Influence of Cardio-Respiratory fitness on Physical Performance in Elite Youth soccer players. Football is described as a high-intensity intermittent sport, with elite players demonstrating a superior ability to perform high-intensity activities during competitive match-play in both adult and youth football. During match-play, however, low intensity activities account for the majority of an individual’s physical performance, at all levels of competition. Furthermore, research suggests that youth populations are better equipped to use oxidative energy pathways, when compared to adult populations, resulting in a greater utilization of aerobic energy pathways for the same relative exercise intensity and reduced level of metabolic acidosis. Consequently, determinants of cardio-respiratory (aerobic) fitness may have a significant impact upon youth players’ physical performance during football match-play and in particular, their ability to perform repeated bouts of high intensity activities. Superior levels of maximum oxygen consumption will theoretically, enable players to work at a higher intensity during football match-play, for a lower relative energy cost than those with inferior levels of. Furthermore, football-specific endurance capacity has been shown to be an essential characteristic for youth players aiming to progress to elite adult status. To the authors’ knowledge, this study is the first to assess the relationship between multiple measures of cardio- respiratory fitness in relation to physical football performance outcome measures, obtained during competitive football match- play, in a group of highly trained youth players. There were some limitations associated with this study. Firstly, correlation analyses do not infer causality. The ‘third- variable problem’ must be considered, as other measured or un-measured variables may affect the results. In an attempt to account for this, partial correlations were employed to control for the effects of maturation. Finally, relative thresholds were used to assess players’ physical performance during soccer match-play. (Greg Doncaster, July 2018).

Musculoskeletal disorders (MSDs) are injuries or pain in the human musculoskeletal system, including the joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck and back MSDs can arise from a sudden exertion (e.g., lifting a heavy object), or they can arise from making the same motions repeatedly repetitive strain, or

from repeated exposure to force, vibration, or awkward posture. In this study the researcher found that about 56.1% players suffered from musculoskeletal pain during cool down period, the possible cause of musculoskeletal pain was heavy weight lifting and vigorously playing (Kylasov A, 2011). In the American Journal of Sports Medicine, a study shows that less than 4-year practice session higher rate (55.9%) of injury occurs among 509 female athletes. The elevated number 65%, participants duration of warm up and cool down were more than 16 min and 33.3% were under duration of less than or equal 15 min in this study. Another study shows that 9.1% within 76 participants done warm up-cool down activity to prevent athletic injury (Payne et al., 2007).

In the cool down period among 228 players, there are 69.7% players pulse down was bind to 60 to 100 bpm, which considered as normal according to the American heart association. The American Heart Association states the normal resting adult human heart rate is 60–100 bpm. Tachycardia is a fast heart rate, defined as above 100 bpm at rest. Bradycardia is a slow heart rate, defined as below 60 bpm at rest. During sleep a slow heartbeat with rates around 40–50 bpm is common and is considered normal. When the heart is not beating in a regular pattern, this is referred to as an arrhythmia. Abnormalities of heart rate sometimes indicate disease. Here are 30.3% players pulse down was high during cooldown period (Backus BE, 2013).

However, Robert Robergs, an exercise physiologist at the University of New Mexico who studied Gatorade, said that unless someone is exercising or competing in a sporting event for longer than 90 minutes, there is no reason to drink something with excess sugar and electrolytes. The Australian Institute of Sport states that excessive salt supplementation during exercise may lead to "gastrointestinal problems or cause further impairment of fluid balance" and may cause salt-induced cramps. Sodium in drinks might help to avoid hyponatremia (low sodium), but only after sustaining athletic activity for more than four hours; a sports drink containing sodium may be appropriate for recovery from intense and prolonged training or competition (Cohen, 2013)

Another researcher also took part in Importance of Assessing Cardiorespiratory Fitness in Clinical Practice: A Case for Fitness as a Clinical Vital Sign. The purpose of this statement is to review current knowledge related to the association between CRF (cardiovascular fitness) and health outcomes, increase awareness of the added value of

CRF to improve risk prediction, and suggest future directions in research. Although the statement is not intended to be a comprehensive review, critical references that address important advances in the field are highlighted. The underlying premise of this statement is that the addition of CRF for risk classification presents health professionals with unique opportunities to improve patient management and to encourage lifestyle-based strategies designed to reduce cardiovascular risk. These opportunities must be realized to optimize the prevention and treatment of CVD and hence meet the American Heart Association's 2020 goals. Although cardiovascular and stroke prevention strategies are commonly recommended for middle-aged and older adults, including aggressive risk factor modification (e.g. hypertension, T2DM, cholesterol) via lifestyle changes and pharmacotherapies, as well as efforts to reduce or eliminate cigarette smoking, alcohol consumption, and obesity, limited data are available regarding the potential prophylactic role of CRF in reducing the incidence of cerebrovascular events. (Robert Ross, 2016) Nevertheless, according to a 10.9-year follow-up study of older men, there was a strong, inverse dose-response association between time spent walking and risk of stroke, independent of walking pace (intensity) and established and novel risk factors. Higher levels of CRF are associated with a lower risk of developing certain cancers, including lung and breast cancer and cancers of the gastrointestinal system. A recent meta-analysis reported 20% and 45% lower risk of all-cause cancer mortality in moderately and highly fit people, respectively, than in the low-CRF group, irrespective of adiposity. Although the mechanisms by which regular moderate to vigorous physical activity, a strong determinant of CRF, might influence malignant cell growth is not clear, associated interactions between adiposity, immune, and endocrine function could serve to suppress cancer development. Possible underlying mechanisms include decreased gastrointestinal transit time, improved immune function and insulin sensitivity, alterations in insulin-like growth factors and other modulating hormones (e.g. leptin), favorable changes in body composition, and combinations thereof. An underlying premise of this statement is that CRF should be measured in clinical practice if it can provide additional information that influences patient management. Indeed, decades of research have produced unequivocal evidence that CRF provides independent and additive morbidity and mortality data that when added to traditional risk factors significantly improves CVD risk prediction. On the

basis of these observations alone, not including CRF measurement in routine clinical practice fails to provide an optimal approach for stratifying patients according to risk. As noted in numerous recent American Heart Association scientific statements, the measurement of CRF in clinical settings is both important and feasible (Robert Ross, 2016). In this present time by the increasing number of female athletes, physiotherapists working scope is widening. Physiotherapists are applying more specific methods based on researched evidence and result and developing their therapy. Female athletes 3 are also becoming more conscious of their injuries (Orchard, 2013).

Significant muscle wasting is generally experienced by ill and bed rest patients and older people. Muscle wasting leads to significant decrements in muscle strength, cardiorespiratory, and functional capacity, which increase mortality rates. As a consequence, different interventions have been tested to minimize muscle wasting. In this regard, blood flow restriction (BFR) has been used as a novel therapeutic approach to mitigate the burden associated with muscle waste conditions. Evidence has shown that BFR can counteract muscle wasting during immobilization or bed rest. Moreover, BFR has also been applied while performing low intensity resistance and endurance exercises and produced increases in muscle strength and mass. Endurance training with BFR has also been proved to increase cardiorespiratory fitness. Thus, frail patients can benefit from exercising with BFR due to the lower cardiovascular and joint stress compared with traditional high intensity exercises. Therefore, low intensity resistance and endurance training combined with BFR may be considered as a novel and attractive intervention to counteract muscle wasting and to decrease the burden associated with this condition. Blood flow restriction (BFR) has been tested as a new therapeutic approach to counteract muscle wasting. It uses a pneumatic pressure cuff wrapped around the proximal region of the target limb, which is maintained inflated throughout the session to reduce the blood flow to the limb. Evidence has demonstrated that 14 days of BFR are more effective than isometric exercise to prevent muscle waste and weakness induced by immobilization and unloading. Moreover, BFR has been applied during exercise training to further minimize muscle wasting. There is mounting evidence that performing resistance and ET with BFR can increase muscle hypertrophy to a similar extent than high intensity RT (usual exercise prescription). In some cases, physically frail patients are not able to perform high intensity

RT, and thus, low intensity resistance or ET with partial BFR could be considered as an important strategy to counteract muscle wasting in ageing and disease conditions. However, long-term studies are needed to ensure the safety of BFR training in patients with chronic diseases diagnosed with muscle wasting (Miguel S. Conceição, 2019). In Germany different aspects of epidemiology and prevention have been found in a sport injury reports of athletes 200,883 athletes are taken as sample, a survey is driven among their sport injuries (Orchard et al., 2006).

Elite soccer match play is characterized by intermittent high intensity activity underpinned by high levels of aerobic and anaerobic fitness in players. During a soccer match, the typical distance covered by an elite player is 10–13 km, most of which is walked or at low intensity. This aerobic base is interspersed by high intensity activity including accelerations, sprinting, changes in direction, jumping, side stepping, tackling, and game-specific technical skills. These changes in movement patterns can only be performed providing players have sufficient muscle strength, flexibility, and agility. These high intensity periods are not only the most interesting moments of a soccer game but also the most decisive. However, there are marked differences in physical and physiologic output during a game between individual players, related to position and playing style as well as team tactics. Therefore, it is important that players and coaches have access to objective data on player physical status during the season for selection and training purposes. This type of data can also be used as feedback and as motivation for players. The purpose of this review is to analyze the contemporary research available in physiological testing of soccer players, with the focus on cardiorespiratory testing specifically. The review considers tests carried out in all populations and includes field and laboratory tests. Routine physical fitness testing in soccer players is warranted and can be used to identify individual strengths and weaknesses, talent selection, fitness profile, training effects, monitor return to training, or competition and for individual training prescription. Testing undertaken in laboratory settings has high accuracy but limited sensitivity to changes in performance and specificity to soccer match play may be adopted to give a general fitness profile of a player and during parts of the season when changes in fitness are expected to be large. Field tests offer a viable, more practical alternative for soccer teams. Such tests have shown greater sensitivity to performance

changes, high correlation with, and high validity. Issues regarding accuracy and reliability have been improved as protocols and testing equipment have developed. Presence of a ball in the assessment of physical capacity in soccer players provides greater motivation than without. Intermittent tests with soccer-specific actions increase the validity and the usefulness of data obtained from such tests. Care must be taken regarding test design to minimize the effects of technical skill performance on physiological measures. Questions regarding direct validity of tests still abound and a combination of tests may be required for a comprehensive assessment of players. Close co-operation and communication between coaches, players, and sports science personnel together with well-planned, organized fitness testing will help in delivering the objectives of fitness testing in soccer players. This critical review discusses the applied techniques and technologies in testing soccer players' health and fitness variables with a specific focus on cardiorespiratory testing. A clear distinction of the functionality and the specificity between the field tests and laboratory tests is established in the literature. The review findings prioritize field tests over laboratory tests, not only for commodity purpose but also for motivational and specificity. Moreover, the research literature suggests a combination of various tests for a comprehensive assessment of the players. Lastly, more research needs to be conducted to contribute into the setting up of a comprehensive test model through the combination of various specific exercise modes to soccer players. (Monèm Jemni1, 2018).

3.1 Study design:

This study had done through using cross sectional prospective survey under a quantitative study design. This methodology was chosen to fulfill the aim of the study as an effective way to collect data. For conducting the research work, in the form of a retrospective type of survey design quantities research model is used. Survey is a way to research where information is collected from a large number of people using interview or questionnaire, by which a complete picture of the group can be found in the fact of any characteristics which fulfils the demand and purpose of the research. This research analyzes different facts, events, similar points to find result and drawing a calculative decision. For this, retrospective approach is taken to conduct this research work.

3.2 Study area:

BKSP (Bangladesh Krira Shikkha Protishtan) in Dhaka, Bangladesh. BKSP is the national sports institute of Bangladesh. It is residential and is located at Savar. There are various sports are being played and lots of young players have been playing here.

3.3 Study population:

Peoples who are playing sports in BKSP, Bangladesh.

3.4 Sampling procedure:

The samples were selected through convenience sampling technique due to less duration of time and it is one of the easiest, cheapest and quicker method of sample selection. Sample will meet the inclusion and exclusion criteria and participate in the study voluntarily.

3.4 Sampling size:

$$n = \frac{z^2 pq}{d^2}$$

Here, n= Sampling size

$$= \frac{(1.96)^2 \times 0.21}{0.0025}$$

p= 0.7 (Hopkins WG1, 1999)

$$= 322.18$$

q= 1-p

z= 1.96

d= 0.05

After adding 10% then result will be 354.

3.6 Inclusion criteria:

- 1: Male players
- 2: Sports players
- 3: Young in age

3.7 Exclusion criteria:

- 1: Female players.
- 2: Unprofessional players.
- 3: Non-sports players

3.8 Data collection tools and method:

A written questionnaire, pen, paper, consent form was used as data collection tools in this study.

3.9 Data analysis:

Data was analyzed in Microsoft Excel 2019 using a SPSS 25 version software program. All the data entered into the computer with specific coding and then analyzed using Statistical Package for the social sciences (SPSS) 25 version. The results were presented with the use of percentage (%). The data was analyzed by percentage (%), tables, bar Figures and pie Figure etc. Chi Square test used to show association between variables.

3.9.1 Chi square test:

Chi square test is a nonparametric test of statistical significance for bivariate tabular analysis with a contingency table. Chi square helps us analyze data that come in the form of counts. This test can be applied to nominal or categorical data. The most common application for chi square is to determine whether or not a significant difference exists between the observed counts of cases falling into each category and the expected counts based on the null hypothesis. It is often used to compare two proportions.

3.10 Ethical consideration:

A research proposal was submitted to the ethical review board of SCMST to get approval. After that an approval letter was sent to BKSP authority. After approving the research was conducted. The participant was ensuring that their comments would not affect their personal life. When researcher had received an approval letter from the ethical committee than data collection was started.

3.11 Budget:

This is one of my courses for final year, B. Sc in Physiotherapy. So, budget was my own and I have spent all the costs required for this study.

3.12 Limitation of the study

There were a number of limitations and barriers in this research project which had affect the accuracy of the study, these are as follow:

First of all, time of the study was very short which had a great deal of impact on the study. If enough time was available knowledge on the thesis could be extended.

As a student, this study conducted by my own fund/finance, so there might have some limitation of financial aspect within this study.

This study doesn't represent whole population within country.

This study has provided for the first-time data on the cardiorespiratory fitness among the sport players in Bangladesh. No research has been done before on this topic. So, there was little evidence to support the result of this project in the context in Bangladesh.

The research project was done by an undergraduate student and it was first research project for him. So, the researcher had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first survey of the researcher so might be there were some mistakes that overlooked by the supervisor and the honorable teacher.

4.1 Socio-Demographic information.

4.1.1: Age of the participants

In this study, around 228 players are involved, which there is 62 players are under 16 years old, 138 players are from 17 to 21 years old and 28 players are above 22 years old. Mean of the age: 18.22

Table no 1: Distribution of age of the participants (n=228)

Age (years)	Frequency (n=228)	Percentage (%)	Mean
Below 16 years	62	27%	18.22
17 to 21 years	138	61%	
Above 22 years	28	12%	

4.1.2: Living area of the participants

From 228 players 121 players are from urban area, 106 players are from village and the lowest amount of rural area is only 1 player.

Table no 2: Distribution of living area of the participant (n=228)

Living area	Frequency (n=228)	Percentage (%)
Urban	121	53.1%
Rural	1	0.4%
Village	106	46.5%

4.1.3: Education level of the participants

From 228 players, 85 players are at graduate level, 76 players are at higher secondary level and the other is 67 player which are on secondary level. The higher percentage of the educational level is about 37.3%.

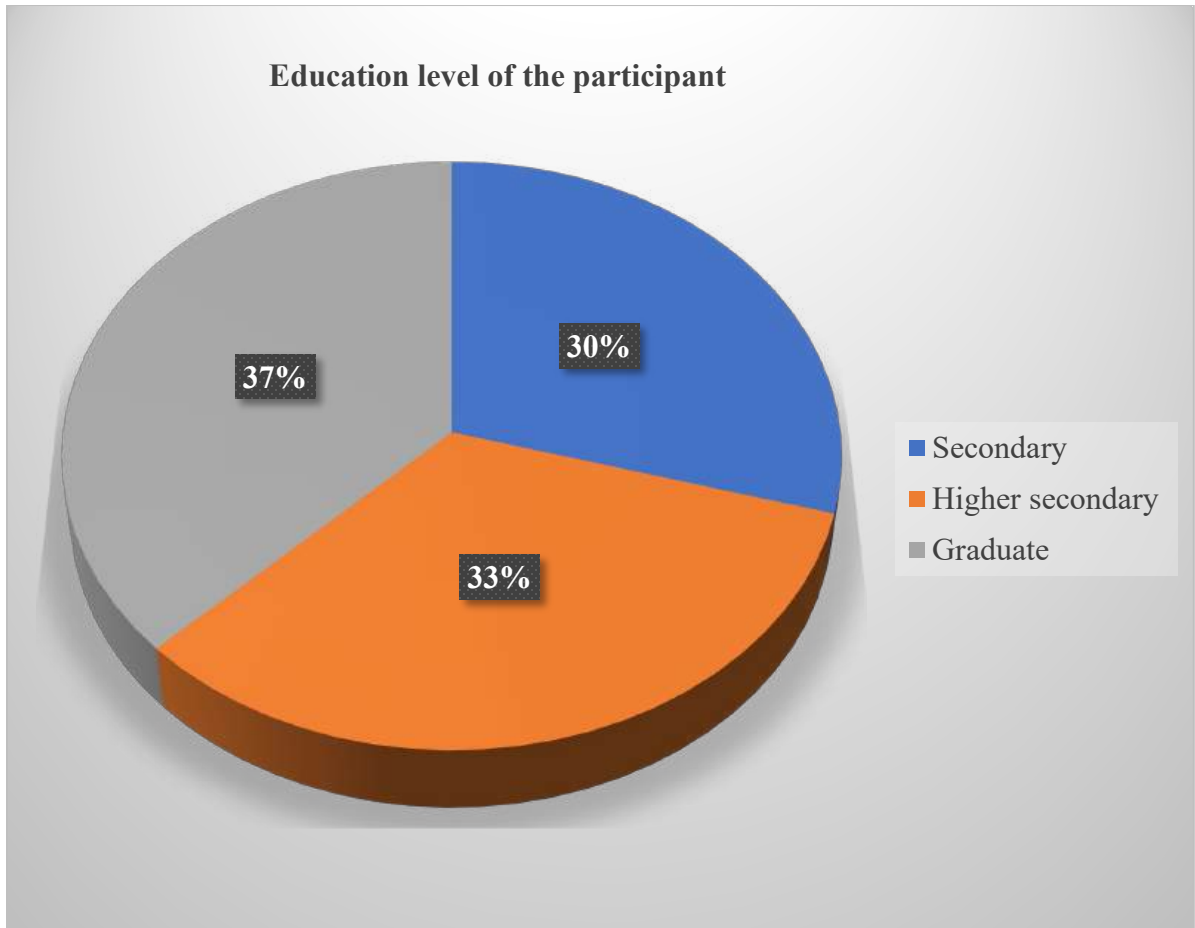


Figure no 1: Distribution of education level of the participant (n=228)

4.1.4: Family types of the participants

There are 133 players are from single family and 95 players are from joint family whether the total number is about 228. The higher rate is single family which is about 58%.

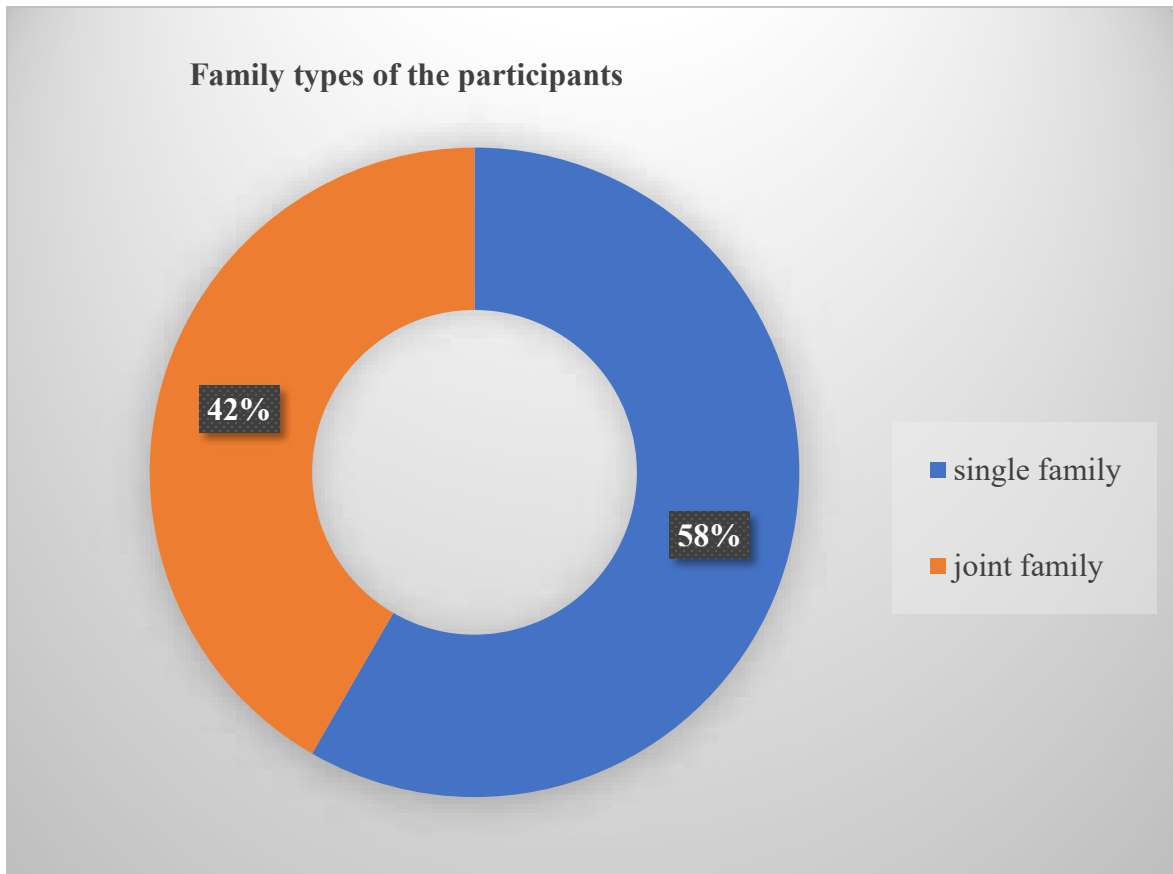


Figure no 2: Distribution of the family types of the participant (n=228)

4.1.5: Religion of the participant

During this study the researcher found there are 222 players are Muslim, 4 players are Hindu and other 2 players are Buddhist. The total amount of players is 228.

Table no 3: Distribution of religion of the participant (n=228)

Religion	Frequency (n=228)	Percentage (%)
Muslim	222	97.4%
Hindu	4	1.8%
Buddhist	2	0.9%

4.2: Sports related variable

4.2.1: Sports role of the participants

Among 228 players there are 66 players are cricketers then gradually 57 players are footballers, 26 players are belonging tennis, 25 players are hockey, 23 players are volleyball and the rest is others.

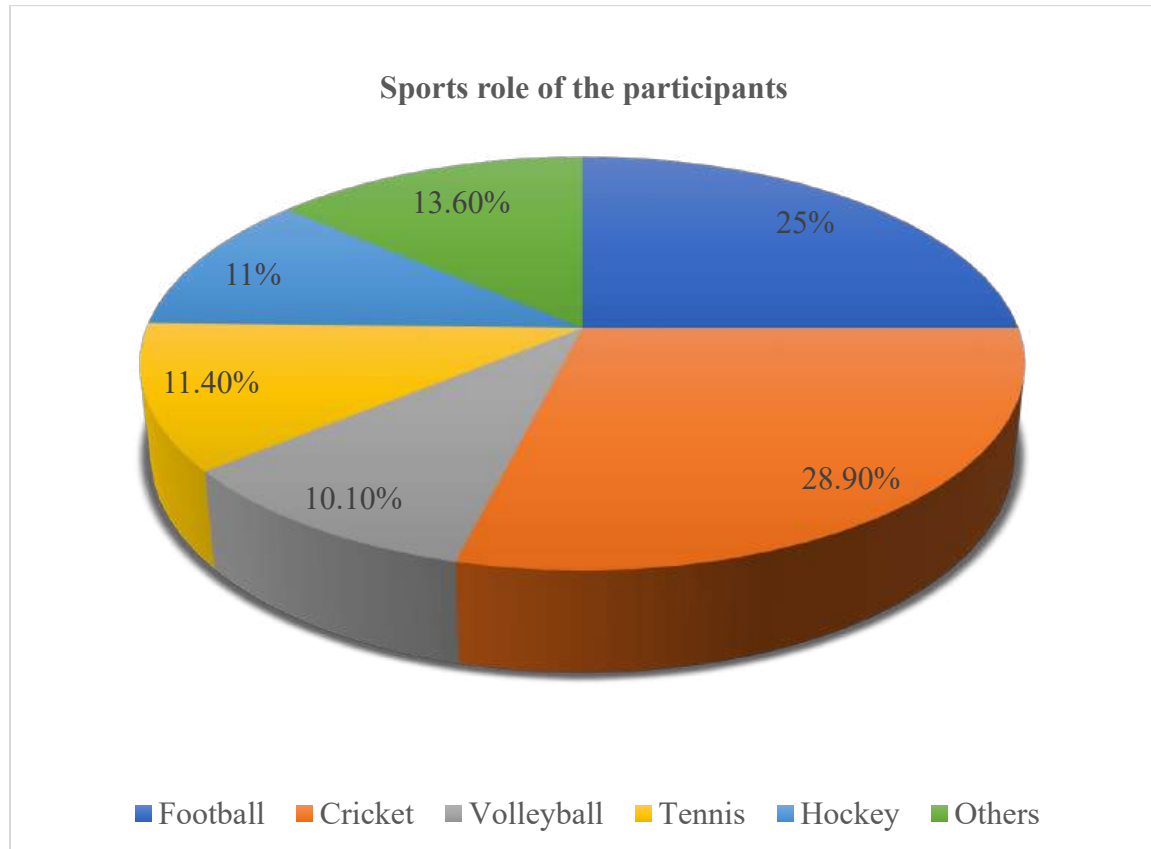


Figure no 3: Distribution of sports role of the participants (n=228)

4.2.2: Playing duration of the players

Among 228 players most of the players are playing more than 1 to 3 years and 3 to 6 years, both are approximately 45.6% compared to others.

Table no 4: Distribution of playing duration of the players (n=228)

Playing duration (years)	Frequency (n=228)	Percentage (%)
Half year to 1 year	7	3.1%
1 to 3 years	104	45.6%
3 to 6 years	104	45.6%
More than 6 years	13	5.7%

4.2.3: Worn jacket after finish playing

This is the most vital things of this study, the researcher found that around 76.3% players were not usually worn jacket after finished match play.

Table no 5: Distribution of worn jacket after finish playing (n=228)

Worn jackets	Frequency (n=228)	Percentage (%)
Yes	54	23.7%
No	174	76.3%

4.2.4: Last date of injury

Suffered from last injury time among the participant Among 228 players there is 56.1% players were suffered injury before 1 to 3 months.

Table no 6: Distribution of date of last injury (n=228)

Last injury (days to month)	Frequency (n=228)	Percentage (%)
15 to 30 days before	65	28.5%
1 to 3 months before	128	56.1%
3 to 6 months before	31	13.6%
6 to 12 months before	3	1.3%
More than 1 year	1	0.4%

4.2.5: Mostly suffered from injury types

In this figure, the mostly suffered injury was musculoskeletal injury and the percentage was around 52.6%.

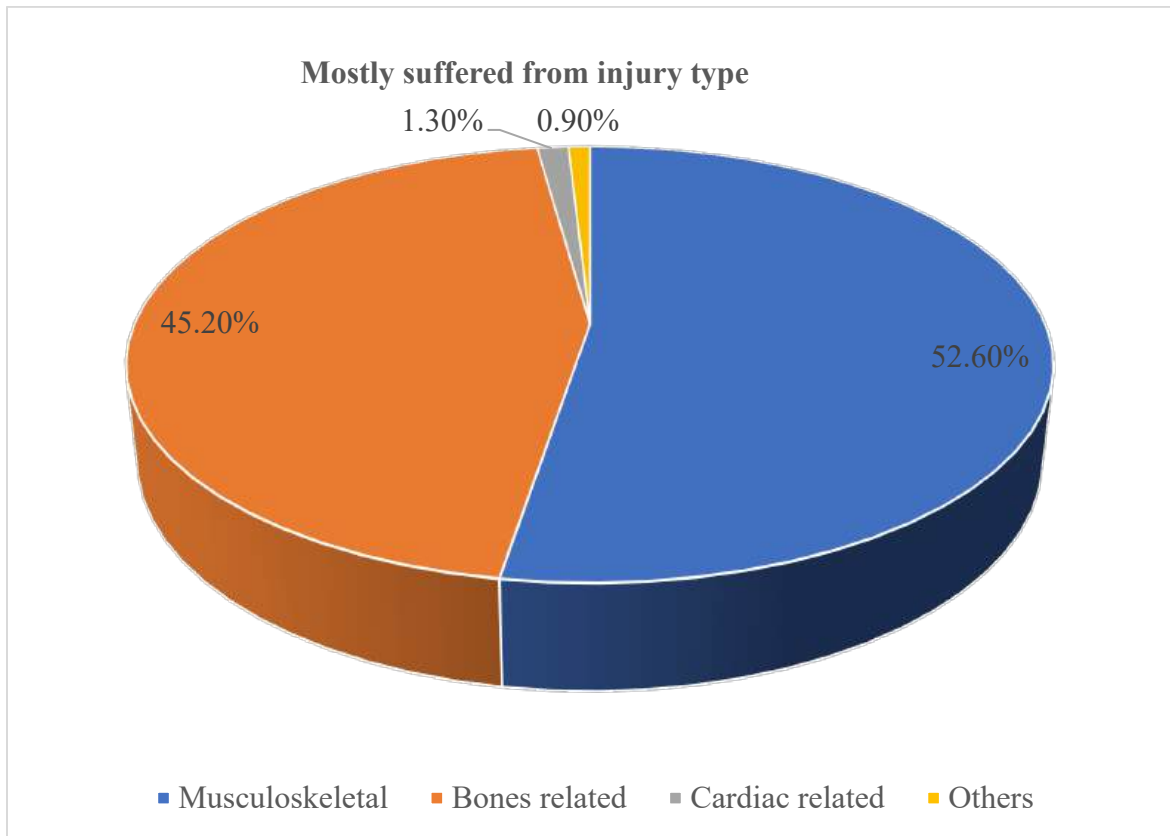


Figure no 4: Distribution of mostly suffered from injury types (n=228)

4.2.6: Feeling chest pain during match play

5.3% players are suffering chest pain during match play among 228 players.

Table no 7: Distribution of feeling chest pain during match play (n=228)

Chest pain felt	Frequency (n=228)	Percentage (%)
Yes	12	5.3%
No	216	94.7%

4.2.7: Suffered from last injury

Here, half of the population was mostly suffered from musculoskeletal types of injury and the rest is gradually bones issues, cardiac issues and others.

Table no 8: Distribution of suffered from last injury type is given below (n=228)

Types of injury	Frequency (n=228)	Percentage (%)
Musculoskeletal	118	51.8%
Bones related	106	46.5%
Cardiac related	2	0.9%
Others	2	0.9%

4.2.8: Taking sports drinks

More than maximum players are taking sports drink during matches among 228 players.

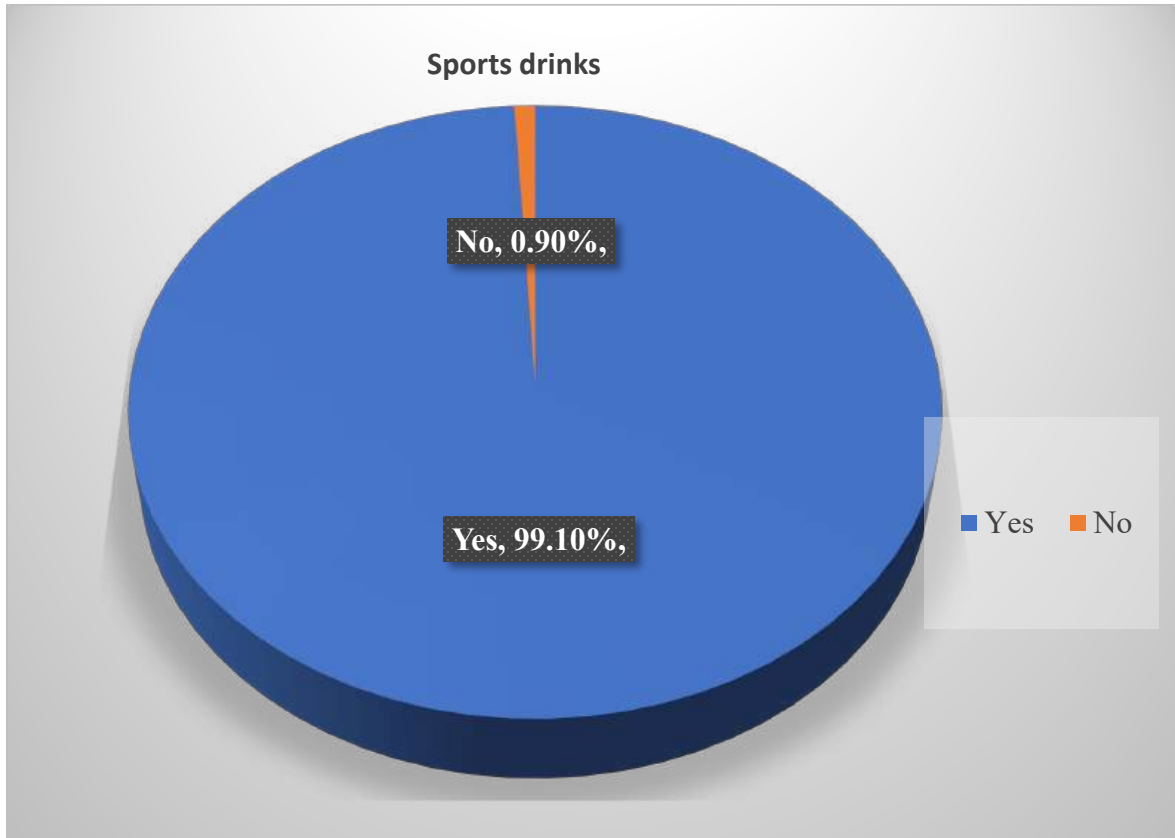


Figure no 5: Distribution of taking sports drink during match play (n=228)

4.2.9: Suffering from any cardiac disease

There is lower amount of population were suffered from cardiac disease. which is too low compared to whole population.

Table no 9: Distribution of suffering from any cardiac disease (n=228)

Suffered from cardiac disease	Frequency (n=228)	Percentage (%)
Yes	5	2.2%
No	223	97.8%

4.2.10: Feeling oxygen deficiency during match play

About eighty six percent of players free from dyspnea.

Table no 10: Distribution of feeling dyspnea during match play (n=228)

Felt dyspnea	Frequency (n=228)	Percentage (%)
Yes	31	13.6%
No	197	86.4%

4.3: Warm up related variables

4.3.1: Warm up time

Among whole population there are ninety seven percent players has done their warm up time around fifteen to thirty minutes.

Table no 11: Distribution of warm up time (n=228)

More than ninety seven percent players trained during warm up was 15 to 30 minutes.

Warm up time (minutes)	Frequency (n=228)	Percentage (%)
Below 15 minutes	5	2.2%
15-30 minutes	222	97.4%
30-45 minutes	1	0.4%

4.3.2: Breathing difficulty during warm up

About ninety percent of the population did not felt breathing difficulty during warm up.

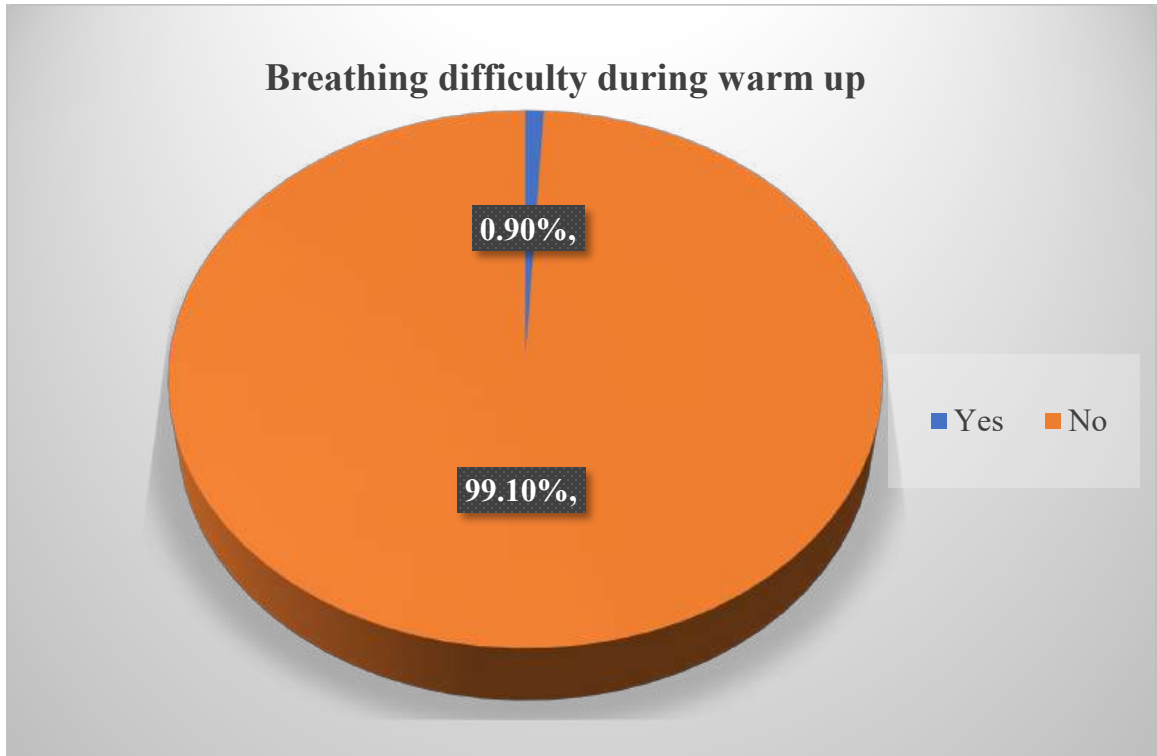


Figure no 6: Distribution of breathing difficulty felt by participants during warm up (n=228)

4.3.3: Pulse rate during warm up

About ninety percent players pulse rate was normal during warm up, which was count as sixty to one hundred beats per minute.

Table no 12: Distribution of pulse rate during warm up (n=228)

Pulse rate (BPM)	Frequency (n=228)	Percentage (%)
60 to 100 bpm	227	99.6%
Above 100 bpm	1	0.4%

4.3.4: Felt chest pain during warm up

In this study, Maximum players of the population did not feel chest pain during warm up

Table no 13: Distribution of felt chest pain during warm up (n=228)

Felt chest pain	Frequency (n=228)	Percentage (%)
Yes	2	0.9%
No	226	99.1%

4.4: Cool down related variables

4.4.1: Pulse rate during cool down

More than half of the populations pulse rate was normal.

Table no 14: Distribution of pulse rate during cool down (n=228)

Pulse rate (BPM)	Frequency (n=228)	Percentage (%)
60 to 100 bpm	159	69.7%
Above 100 bpm	69	30.3%

4.4.2: Respiratory rate during cool down

Around more than 68% players respiratory rate was normal during cool down, whether the normal count of respiratory is 12 to 25 breaths per minute.

Table no 15: Distribution of respiratory rate during cool down (n=228)

Respiratory rate (BPM)	Frequency (n=228)	Percentage (%)
below 12 breaths per minute	1	0.4
12 to 25 breaths per minute	155	68
above 25 breaths per minute	72	31.6

4.4.3: Felt chest pain during cool down

In this study also found that more than half and quarter population did not felt chest pain during cool down and the rest is about thirty three percent were felt chest pain.

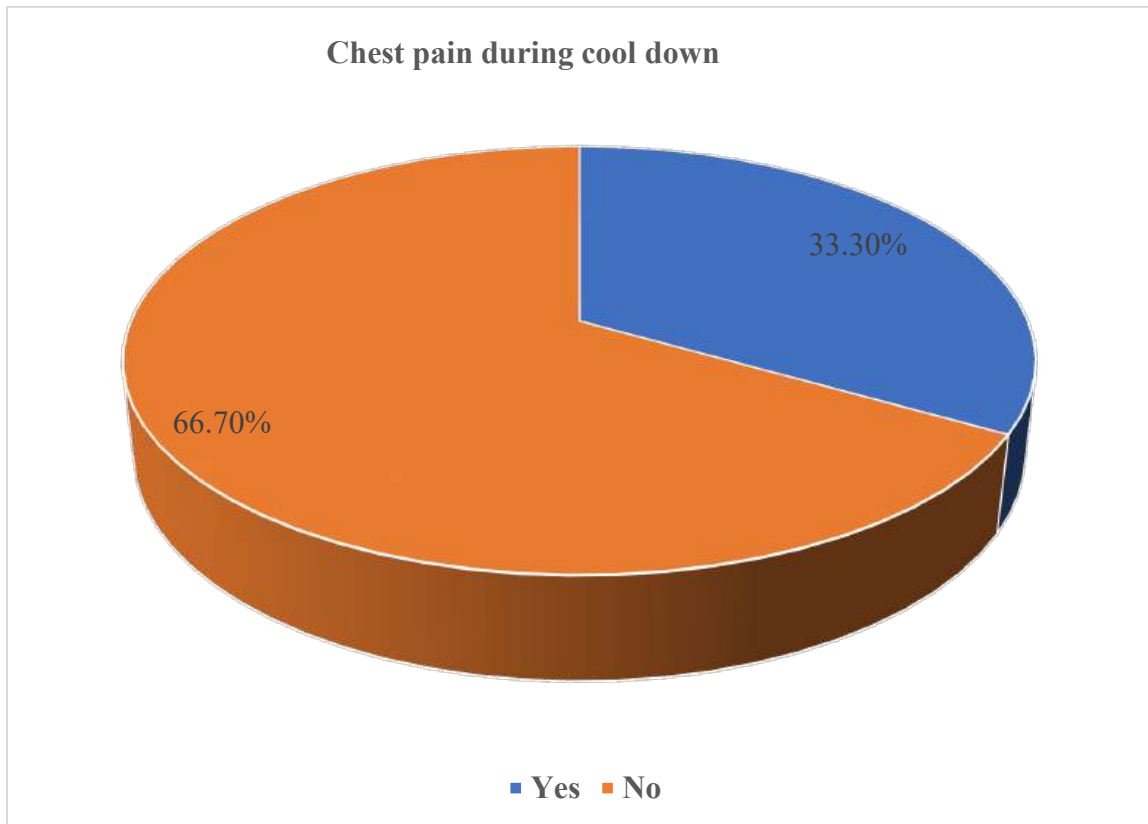


Figure no 7: Distribution of feeling chest pain during cool down (n=228)

4.4.4: Felt musculoskeletal pain after finished matches

Most of the players are felt musculoskeletal pain after finished main event.

Table no 16: Distribution of feeling musculoskeletal pain after finishing matches (n=228)

Felt musculoskeletal pain	Frequency (n=228)	Percentage (%)
Yes	128	56.1%
No	100	43.9%

4.5: Others variable

4.5.1: Consultation with doctor

Here, also found that about seventy three percent players consult with doctor if they ever fall in injury.

Table no 17: Distribution of consultation with doctor (n=228)

Consulted with doctor	Frequency (n=228)	Percentage (%)
Yes	167	73.2%
No	61	26.8%

4.5.2: Consultation with physiotherapist

Here 91.20% participants are regularly consult with physiotherapist as well.

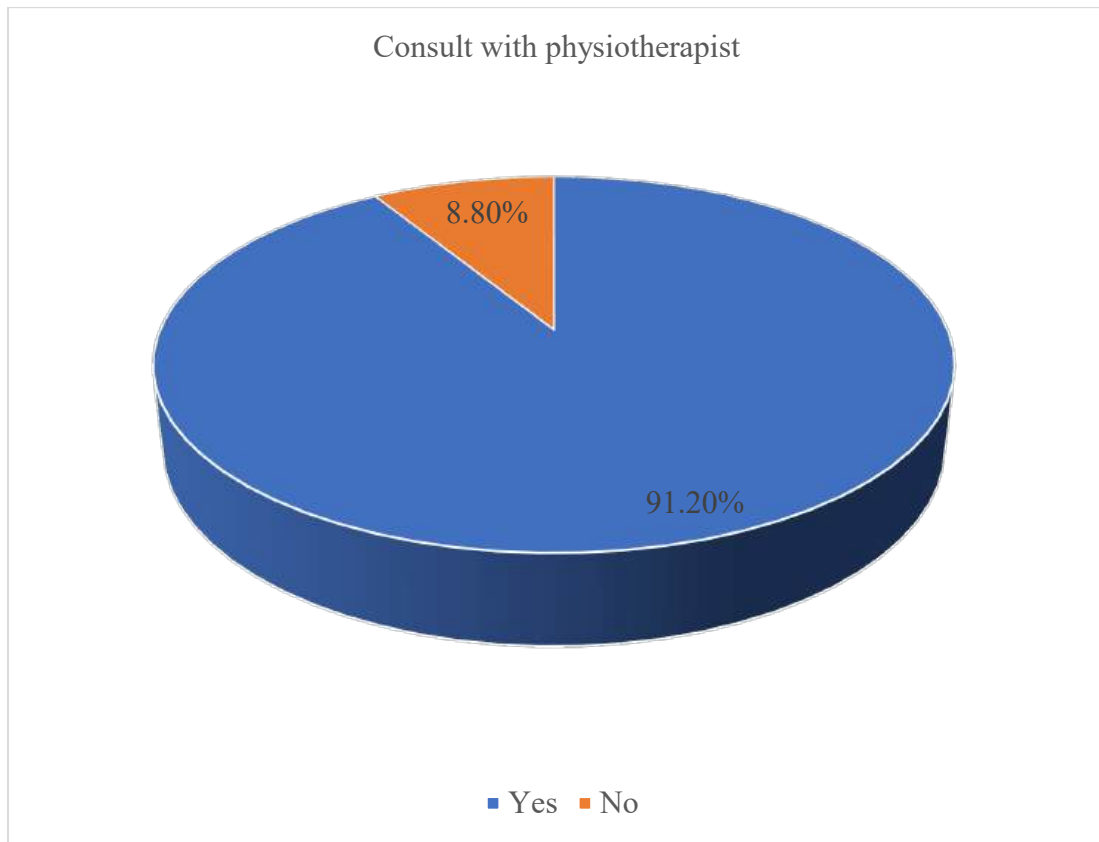


Figure no 8: Distribution of consultation with physiotherapist (n=228)

4.5.3: Medication taken by respondents

Among 228 players maximum number players are not taking any drugs normally.

Table no 18: Distribution of medication taken by respondents (n=228)

Medication taken	Frequency (n=228)	Percentage (%)
Yes	1	0.4%
No	227	99.6%

4.6: Association

4.6.1: Relation between age of the participants and their sports role

Table reveals there is significant relation between age of the participant and sports role ($p = 0.00$).

Table no 19: Relation between age of the participants and their sports role

Age of the participant	Football	Cricket	Volleyball	Tennis	Hockey	Others	Total	P value	Chi value
14	0	0	0	0	0	4	4	0.000	128.270
15	6	11	1	0	6	7	31		
16	6	6	1	1	3	10	27		
17	15	6	3	4	10	6	44		
18	13	6	0	3	4	3	29		
19	5	10	3	2	1	1	22		
20	4	7	4	8	1	0	24		
21	5	6	6	2	0	0	19		
22	3	5	4	3	0	0	15		
23	0	5	1	2	0	0	8		
24	0	4	0	1	0	0	5		

4.6.2: Relation between sports role and mostly suffered from injury types

Table reveals that there is no significant relation between sports role and mostly suffered from injury ($p=0.266$).

Table no 20: Relation between sports role and mostly suffered from injury types

Sports role	Musculoskeletal issues	Bones related issues	Cardiac related issues	Total	Chi value	P value
Football	35	19	1	2	17.394	0.266
Cricket	36	28	2	0		
Volleyball	11	12	0	0		
Tennis	12	14	0	0		
Hockey	15	10	0	0		
Others	11	20	0	0		

4.6.3: Relation between wearing jackets and respiratory difficulty during cool down

Table reveals there is significant relation between wearing jackets and respiratory difficulty during cool down ($p = 0.011$).

Table no 21: Relation between wearing jackets and respiratory difficulty during cool down

		Respiratory rate during cool down				Chi value	P value
Wearing jackets after finishing match play		Below 12 breaths per minute	12 to 25 breath per minute	Above 25 breath per minute	Total	9.053	0.011
	Yes	1	29	24	54		
	No	0	126	48	174		

4.6.4: Relation between mostly suffered injury type and warm up time

Table reveals there is significant relation between mostly suffered from injury and warm up time ($p=0.000$).

Table no 22: Relation between mostly suffered injury type and warm up time

		Warm up time				Chi value	P value
		Below 15 minutes	15 to 30 minutes	30 to 45 minutes	total		
Mostly suffered from injury type	Musculoskeletal	3	117	0	120	61.728	0.000
	Bones issues	0	102	1	103		
	Cardiac issues	2	1	0	3		
	Others	0	2	0	2		

4.6.5: Relation between musculoskeletal pain and consultation with physiotherapist

Table reveals there is no significant relation between musculoskeletal pain and consultation with physiotherapist ($p = 0.716$).

Table no 23: Relation between musculoskeletal pain and consultation with physiotherapist

Musculoskeletal pain	Consultation with doctor			Chi value	P value
	Yes	No	Total		
Yes	116	12	128	0.133	0.716
No	92	8	100		

4.6.6: Relation between sports role and chest pain after finish main event

Table reveals there is significant relation between sports role and chest pain after finish main event ($p=0.000$).

Table no 24: Relation between sports role and chest pain after finish main event

Sports role of the participants		Chest pain after finish main event			Chi value	P value
		Yes	No	Total		
	Football	20	37	57	24.440	0.000
	Cricket	16	50	66		
	Volleyball	16	7	23		
	Tennis	8	18	26		
	Hockey	12	13	25		
	Others	4	27	31		

Physical exercise is an important component of a healthy lifestyle for every generation of the people as well as fulfilling the natural human need for physical activity. This study conducts about player sociodemographic information also their playing styles and roles. This study will help to find out players weaknesses and injury tendency as well. Furthermore, reducing risk factors is a key to get succeed in the match play and obviously it will help to find out the young stars as well (Greg Doncaster, July 2018).

The researcher took part in the title 'Influence of Cardio-Respiratory fitness on Physical Performance in Elite Youth soccer players. Seventeen highly trained youth football players aged between 12 and 14 years volunteered to participate in this study. All participants were outfield players (5 defenders, 6 midfielders and 6 attackers) from the same Category One, Premier League Football Academy in the Scotland. This researcher found significant changes in vo2 max, respiratory changes and cardiac output among the players, also there is significant players who are able to improve themselves after this study (Greg Doncaster, July 2018).

In this study, 228 players are involved such as football, cricket, volleyball, tennis etc. players are performed. Which players are around 14 to 24 years old, maximum players are very young in age. This study conducted maximum players are from urban area then rural or any other site. These players are still studying in BKSP and also playing various sports as well.

Another researcher also took part in Importance of Assessing Cardiorespiratory Fitness in Clinical Practice: A Case for Fitness as a Clinical Vital Sign. The purpose of this statement is to review current knowledge related to the association between CRF (cardiovascular fitness) and health outcomes, increase awareness of the added value of CRF to improve risk prediction, and suggest future directions in research. Although the statement is not intended to be a comprehensive review, critical references that address important advances in the field are highlighted (Robert Ross, 2016).

In this study conducted that there is a significant change in pulse rate and respiratory rate of the players, minimum players are suffering from respiratory difficulty during warm up

and cooldown period among 228 players. Although most players are suffering from musculoskeletal pain after vigorously playing long time.

Among 228 players there are 66 players are cricketers then gradually 57 players are footballers, 26 players are belonging tennis, 25 players are hockey, 23 players are volleyball and the rest is others. In the result shows that 45.6% players playing are approximately 1 to 3 years and 3 to 6 years which is good for finding young stars. Lowest number of players are playing around 6 to 12 months which is considered as new players. The researcher also found that there are 76.3% players were not usually worn jacket after finished match play. Scientifically proved that wearing jacket after match play can reduce risk of sudden temperature of the body (Goossens, 2012). It also improves players stability and reduce injury as well. In this study just 23.7% players were usually worn jacket after finishing match play and this is too low.

Suffered from last injury among the 228 players is about 56.1% are about 1 to 3 months and most players suffered from musculoskeletal injury which is around 52.6%. The significant cause of musculoskeletal injury is unknown. Other researcher found that Muscular and skeletal injuries have also been found to increase when the cool down procedure is neglected. Ankle injuries are one of the most common injuries athletes and participants are at risk of obtaining when the cool down is performed ineffectively or not at all. Injuries are decreased significantly when the cool down is performed for an adequate amount of time compared to only a short period of time (J. & H, 2003).

In this research also found that around 99.1% players are usually taken sports drinks during matches. Other researcher found that Athletes actively training and competing lose water and electrolytes by sweating, and expending energy. However, Robert Robergs, an exercise physiologist at the University of New Mexico who studied Gatorade, said that unless someone is exercising or competing in a sporting event for longer than 90 minutes, there is no reason to drink something with excess sugar and electrolytes. The Australian Institute of Sport states that excessive salt supplementation during exercise may lead to "gastrointestinal problems or cause further impairment of fluid balance" and may cause salt-induced cramps. Sodium in drinks might help to avoid hyponatremia (low sodium), but only after sustaining athletic activity for more than four hours; a sports drink containing

sodium may be appropriate for recovery from intense and prolonged training or competition (Cohen, 2013).

In the cool down period among 228 players, there are 69.7% players pulse down was bind to 60 to 100 bpm, which considered as normal according to the American heart association. The American Heart Association states the normal resting adult human heart rate is 60–100 bpm. Tachycardia is a fast heart rate, defined as above 100 bpm at rest. Bradycardia is a slow heart rate, defined as below 60 bpm at rest. During sleep a slow heartbeat with rates around 40–50 bpm is common and is considered normal. When the heart is not beating in a regular pattern, this is referred to as an arrhythmia. Abnormalities of heart rate sometimes indicate disease. Here are 30.3% players pulse down was high during cooldown period (Backus BE, 2013).

Other researcher state that, for humans, the typical respiratory rate for a healthy adult at rest is 12–18 breaths per minute. The respiratory center sets the quiet respiratory rhythm at around two seconds for an inhalation and three seconds exhalation. This gives the lower of the average rate at 12 breaths per minute. In this study there is around 68% players respiratory rate was normal during cool down period and the rest 31.6% are above 25 breaths per minute, which is consider as high (Heart rate, 2018).

In this study conducted that around 33.3% players were suffered chest pain during cool down period after vigorously playing. Other researcher took part that, Chest pain is discomfort, typically in the front of the chest. It may be described as sharp, dull, pressure, heaviness, or squeezing. Associated symptoms may include pain in the shoulder, arm, upper abdomen, or jaw, or nausea, sweating, or shortness of breath. It can be divided into heart-related and non-heart related pain. Pain due to insufficient blood flow to the heart is also called angina pectoris. Those with diabetes or who are old may have fewer clear symptoms (Kumaraveloo & Lunner Kolstrup, 2018).

Musculoskeletal disorders (MSDs) are injuries or pain in the human musculoskeletal system, including the joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck and back MSDs can arise from a sudden exertion (e.g. lifting a heavy object), or they can arise from making the same motions repeatedly repetitive strain, or from repeated exposure to force, vibration, or awkward posture. In this study the researcher found that about 56.1% players suffered from musculoskeletal pain during cool down

period, the possible cause of musculoskeletal pain was heavy weight lifting and vigorously playing (Kylasov A, 2011).

This research also shows that among 228 players there are about 73.2% players has consulted with doctor and 91.2% players are consulted with physiotherapist. Also. 99.6% players are not taken any medication regularly.

This researcher found that there is strong association between age of the participants and their sports role ($p=0.00$) among 228 players. Whether there is 28.39% were cricketer. A study was done in 350 female athletes were found 80% of female who play sports get hurt at the age range of 12-15years, and about 86% female athletes were at the age range of 16-19 and their injuries are classified as serious (Petrie, 2006).

Also found another association between wearing jackets and respiratory difficulty during cool down ($p=0.011$).

Among 228 players 56.1% players were felt pain after finished main event also most of the participant were consulted with physiotherapist (91.20%) ($p=0.7$).

6.1 Conclusion:

Bangladesh Krira Shikkha Protisthan is the largest governmental organization aims to explore talents in sports and train them, also give opportunity to play in different national or international competitions. From the perspective of Bangladesh number of female athletes is fewer than abroad. The result of the study indicates participants of Bangladesh Krira Shikkha Protisthan were most commonly affected by indirect injury rather than direct injury. There were 228 players are involved through this study, researcher found that most of the players were from urban site rather than village and rural. About 28.9% players were cricketer and 25% players were footballer and the rest are gradually volleyball, tennis and others. The researcher found that most of the players were not worn jacket after warm and finishing match play which may cause harmful to the players and may lead to sudden temperature drop after match play. On the other side most of the players are suffering from musculoskeletal injury which may cause by players not done cool down exercise regularly. The researcher also found that significant amount of players pulse rate and respiratory rate was too high compare to others. If the amount could reduce then the injury tendency and cardiac related disease might reduce also.

Also found that players were dependent on physiotherapy rather than drug after injury.

6.2 Recommendations

For future studies, the following recommendations may be made:

A larger sample size may improve the statistical significance of some of the results.

A longer time frame and long-term follow-up examination may prove valuable in showing the long-term effect of the players fitness.

Double blinding procedure should maintain to reduce biasness.

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Consent from

Respondent Id no:

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Dear participant,

I am A.K.M. Mehedi Hasan student of BSc in physiotherapy program in the department of physiotherapy in Saic institute of medical technology affiliated by University of Dhaka conducting the study entitled ‘**Assessing Cardiorespiratory fitness of young male sports players**’ as a part of my thesis work for the partial fulfilment of bachelor degree. There is list of question which include sociodemographic, cardio-respiratory fitness, playing style etc. For spending your time for participate in this self-administered interview which will take around 15-20 minutes. There is list of questionnaires and you need to fill up each answer. The information gained from this questionnaire will be used for academic purpose will be kept confidential. Your participation in this study totally voluntarily and you have a right to withdraw from the interview without clarification at any moment. You can ask any question to the researcher regarding the study your meet up the quarry. Looking forward your kind cooperation.

Declaration of the participant

I have been answered all the question in this survey. The foregoing information has been read to me and that have been answered to my satisfaction. I have noticed that my participation in this study is totally voluntary and I have the right to withdraw from interview without any clarification at any moment. I give my consent voluntarily to be participants in this study.

Respondent name:

Signature and date: Fingerprint:

Witness signature:

সম্মতি পত্র

উত্তরদাতার আইডি নং:

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প্রিয় অংশগ্রহনকারী,

আমি এ কে এম মেহেদী হাসান সাইক ইনস্টিটিউট অব মেডিকেল টেকনোলজির বিএসসি ইন ফিজিওথেরাপী বিভাগের একজন শেষ বর্ষের ছাত্র। আমার বিএসসি ইন ফিজিওথেরাপী ডিগ্রী সম্পন্ন করতে গবেষণার অংশ হিসেবে ‘**পুরুষ খেলোয়াড়দের কার্ডিওরেস্পাইরেটরি ফিটনেস পরিমাপ**’ শিরোনামের একটি গবেষণার কাজ করছি। এখানে আপনার সামাজিক-জনতাত্ত্বিক তথ্য, কার্ডিওরেস্পাইরেটরি ফিটনেস এবং খেলার ধরন ইত্যাদি সম্পর্কে কিছু প্রশ্ন দেয়া আছে যা আপনাকে পূরণ করতে হবে। আপনার নিজের দ্বারা প্রশ্ন গুলোর উত্তর দিতে ১৫ থেকে ২০ মিনিট সময় লাগবে। এখানে কিছু প্রশ্নাবলির তালিকা দেয়া আছে যা আপনাকে প্রত্যেকটি প্রশ্নের উত্তর দিতে হবে। এই গবেষণায় প্রাপ্ত তথ্য শুধু শিক্ষা ক্ষেত্রে ব্যবহার করা হবে এবং অংশগ্রহনকারীর ব্যক্তিগত তথ্য সম্পূর্ণ গোপনীয়তার মধ্যে রাখা হবে, যা অন্য কোথাও প্রকাশ করা হবে না। গবেষণা চলাকালীন সময়ে অংশগ্রহনকারী কোন রকম দ্বিধা বা ঝুঁকি ছাড়াই যেকোন সময় এটা বাদ দিতে পারবেন। আপনার একান্ত সহযোগিতা কামনা করছি।

অংশগ্রহনকারীর ঘোষণা

আমাকে এই নিরীক্ষার জন্য আমন্ত্রন জানানো হয়েছে। আমাকে সম্পূর্ণ প্রশ্নগুলো বুঝানো হয়েছে এবং কোন দ্বিধা ছাড়াই উত্তর দিতে দিয়েছি। আমি লক্ষ্য করেছি, এই গবেষণায় আমার অংশগ্রহন সম্পূর্ণ স্বেচ্ছায় এবং কোন রকম ঝুঁকি ছাড়াই, আমি যে কোন সময় এটাকে বাদ দিতে পারব। আমি এই গবেষণায় অংশগ্রহনে সম্পূর্ণ সম্মতি জ্ঞাপন করছি।

অংশগ্রহনকারীর নাম:

স্বাক্ষর এবং তারিখ: টিপসই:

সাক্ষীর স্বাক্ষর:

QUESTION

TITLE

Assessing Cardiorespiratory Fitness of young male sports players

Code no:

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Date:

Name of the participant:

Address:

Mobile no:

	Sociodemographic information	
No	Question	Answers
1	What is your age?	Ans:
2	Where do you live? 1. Rural 2. Urban 3. Village	Ans:
3	What is your academic qualification? 1. Illiterate 2. PSC 3. JSC 4. SSC 5. HSC 6. Graduate 7. Post graduate 8. Others	Ans:

4	What is your marital status? 1. Married 2. Unmarried 3. Divorced 4. Separate 5. Others	Ans:
5	Which kind of family do you live in? 1. Single family 2. Combined family 3. Others	Ans:
6	What is your religion? 1. Islam 2. Hindu 3. Christian 4. Buddhist 5. Others	Ans:
7	What is your family monthly income?	Ans:
8	What is your height?	Ans:
9	What is your weight?	Ans:

10	<p>What is your nationality?</p> <ol style="list-style-type: none"> 1. Bangladesh 2. Others, please specify 	Ans:
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Sports related question		
1	<p>What kind of sports do you play?</p> <ol style="list-style-type: none"> 1. Football 2. Cricket 3. Volleyball 4. Tennis 5. Hockey 6. Others 	
2	<p>How long have you been playing?</p> <ol style="list-style-type: none"> 1. Below 6 months 2. 6 months -1 year 3. 1-3 year 4. 3-6 year 5. Above 6 year 	
3	<p>Who do you play for?</p> <ol style="list-style-type: none"> 1. For country 2. For club 	
4	<p>Do you wear any jacket after finish playing?</p> <ol style="list-style-type: none"> 1. Yes 2. No 	
5	<p>When was the last injury?</p> <ol style="list-style-type: none"> 1. Before 15-30 days 2. 1-3 months before 3. 3-6 month before 4. 6 month-1 year 5. Above 1 year 	

6	<p>What type of injury do you suffer most?</p> <ol style="list-style-type: none"> 1. Musculoskeletal issues 2. Bones related issues 3. Cardiac related issues 	
7	<p>What was the last injury did you suffered?</p> <ol style="list-style-type: none"> 1. Musculoskeletal issues 2. Bones related issues 3. Cardiac related issues 	
8	<p>Do you take any drinks during playing?</p> <ol style="list-style-type: none"> 1. Yes 2. No 	
9	<p>Have you ever been suffered from any cardiac disease?</p> <ol style="list-style-type: none"> 1. Yes; Please specify..... 2. No 	
10	<p>Do you feel any chest pain during playing?</p> <ol style="list-style-type: none"> 1. Yes 2. No 	
11	<p>Do you feel any respiratory difficulty after finishing play?</p> <ol style="list-style-type: none"> 1. Yes 2. No 	

	Warm up related question	
1	<p>Do you warm up before play?</p> <ol style="list-style-type: none"> 1. Yes 2. No 	Ans:

2	<p>How long do you warm up?</p> <ol style="list-style-type: none"> 1. Below 15 minutes 2. 15-30 minutes 3. 30-45 minutes 4. More then 45 minutes 	Ans:
3	<p>Which exercises do you follow during warm up?</p> <ol style="list-style-type: none"> 1. Jumping jacks 2. Side shuffle 3. Arm circle 4. Back paddling 5. Walking knee hugs 6. Squats 7. Leg swing 8. Others 	Ans:
4	<p>Do you feel any respiratory difficulty during warm up?</p> <ol style="list-style-type: none"> 1. Yes; How long.....? 2. No 	Ans:
5	<p>Do you have any respiratory difficulty issues?</p> <ol style="list-style-type: none"> 1. Yes; What then.....? 2. No 	Ans:
6	<p>Pulse rate during warm up</p> <ol style="list-style-type: none"> 1. Below 60 2. 60 to 100 bpm 3. Above 100 bpm 	Ans:
7	<p>Respiratory rate during warm up</p> <ol style="list-style-type: none"> 1. Below 12 bpm 2. 12 to 25 bpm 	Ans:

	3. Above 25 bpm	
8	Do you feel chest pain during warm up? 1. Yes 2. No	Ans:
9	Do you feel any vomiting during warm up? 1. Yes 2. No	

	Cooldown related question	
1	Pulse rate after finishing match play 1. Below 60 2. 60 to 100 bpm 3. Above 100 bpm	
2	Respiratory rate after match play 4. Below 12 bpm 5. 12 to 25 bpm 4. Above 25 bpm	
3	Do you feel chest pain after finishing match play? 1. Yes 2. No	
4	Do you follow exercises during cooldown period? 1. Yes 2. No	
5	If yes then what kind exercises do you follow? 1. Walking 2. Jogging 3. Others	
6	Do you feel musculoskeletal pain during cooldown period?	

	1. Yes 2. No	
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Others question		
1	Did you ever go to the consultant? 1. Yes 2. No	
2	Which consultant please mention 1. Doctor 2. Physiotherapist	
3	Do you smoke? 1. Yes 2. No	
4	Do you take any medication? 1. Yes, please specify 2. No	

প্রশ্ন পত্র (বাংলা)

পুরুষ খেলোয়াড়দের কার্ডিওরেস্পাইরেটরি ফিটনেস পরিমাপ

কোড নম্বর:

তারিখ:

অংশগ্রহণকারীর নাম:

ঠিকানা:

মোবাইল নম্বর:

সামাজিক-জন্মতাত্ত্বিকতথ্য		
প্রশ্ন নম্বর	প্রশ্ন	উত্তর
১	আপনার বয়স কত?	<input type="text"/>
২	আপনি কোথায় থাকেন? ১। শহর ২। মফস্বল ৩। গ্রাম	<input type="text"/>
৩	আপনার শিক্ষাগত যোগ্যতা কি? ১। অশিক্ষিত ২। প্রাথমিক ৩। মাধ্যমিক	<input type="text"/>

	৪। উচ্চমাধ্যমিক ৫। স্নাতক ৬। অন্যান্য	
৪	আপনার বৈবাহিক অবস্থা কি? ১। বিবাহিত ২। অবিবাহিত ৩। তালাক প্রাপ্ত ৪। বিচ্ছিন্ন	<input type="checkbox"/>
৫	আপনি কোন ধরনের পরিবারে থাকেন? ১। একক ২। যৌথ	<input type="checkbox"/>
৬	আপনার মাসিক আয় কত?	<input type="checkbox"/>
৭	আপনি কোন ধর্মাবলম্বী? ১। মুসলিম ২। হিন্দু ৩। খ্রীস্টান ৪। বুদ্ধ ৫। অন্যান্য	<input type="checkbox"/>
৮	আপনার উচ্চতা কত?	<input type="checkbox"/>

৯	আপনার ওজন কত?	<input type="text"/>
১০	BMI	<input type="text"/>
১১	আপনার জাতীয়তা কি? ১। বাংলাদেশী ২। অন্যান্য	<input type="text"/>

খেলা সম্পর্কীয় তথ্য		
প্রশ্ন নম্বর	প্রশ্ন	উত্তর
১	আপনি কোন ধরনের খেলা খেলেন? ১। ফুটবল ২। ক্রিকেট ৩। ভলিবল ৪। হ্যান্ডবল ৫। হকি ৬। অন্যান্য	<input type="text"/>
২	আপনি কত বছর যাবত খেলছেন? ১। ৬ মাসের কম ২। ৬ মাস থেকে ১ বছর ৩। ১-৩ বছর ৪। ৩-৬ বছর ৫। ৬ বছরের বেশি	<input type="text"/>

৩	আপনি কার হয়ে খেলেন? ১। দেশের হয়ে ২। ক্লাবের হয়ে	<input type="checkbox"/>
৪	আপনি কি খেলা শেষ করার পর জ্যাকেট পরিহিত করেন? ১। হ্যাঁ ২। না	<input type="checkbox"/>
৫	আপনার লাস্ট ইনজুরি কতদিন আগে হয়েছিল? ১। ১৫-৩০ দিন আগে ২। ১-৩ মাস আগে ৩। ৩-৬ মাস আগে ৪। ৬ মাস থেকে ১ বছর আগে ৫। ১ বছরের বেশি	<input type="checkbox"/>
৬	আপনি কোন ধরনের ইনজুরিতে বেশি পরেন? ১। মাংসপেশি জনিত ২। হাড় জনিত ৩। হৃৎপিণ্ডঘটিত সমস্যা ৪। অন্যান্য	<input type="checkbox"/>
৭	খেলার সময় বৃকে ব্যাথা অনুভব করেন? ১। হ্যাঁ ২। না	<input type="checkbox"/>
৮	সর্বশেষ কোন ইঞ্জুরিতে পরেছিলেন? ১। মাংসপেশি জনিত ২। হাড় জনিত ৩। হৃৎপিণ্ডঘটিত সমস্যা ৪। অন্যান্য	<input type="checkbox"/>

৯	খেলার সময় কোন স্পোর্টস ড্রিঙ্কস নেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>
১০	কখনো হৃৎপিণ্ডঘটিত সমস্যাতে ভুগেছিলেন? ১। হ্যাঁ, কোন ধরনের সমস্যা? ২। না	<input type="checkbox"/>
১১	খেলা শেষে শ্বাসকষ্ট অনুভব করেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>

ওয়ার্ম আপ (গা গরম) সম্পর্কীয় তথ্য		
প্রশ্ন নম্বর	প্রশ্ন	উত্তর
১	আপনি খেলা শুরুর আগে ওয়ার্ম আপ করেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>
২	কতক্ষণ যাবত সাধারণত ওয়ার্ম আপ করে থাকেন? ১। ১৫ মিনিটের কম ২। ১৫-৩০ মিনিট ৩। ৩০-৪৫ মিনিট ৪। ৪৫ মিনিটের বেশি	<input type="checkbox"/>
৩	ওয়ার্ম আপের সময় সাধারণত কি কি ব্যায়াম অনুসরণ করেন? ১। জাম্পিং জ্যাক্স ২। সাইড শাফল ৩। আর্ম সার্কেল	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

	৪। ব্যাক প্যাডেলিং ৫। ওয়াকিং নি হাগস ৬। স্কেয়াটস ৭। লেগ সুইং ৮। অন্যান্য	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
৪	ওয়ার্ম আপের সময় কোন শ্বাস কষ্ট অনুভব করেন কিনা? ১। হাঁ, কতক্ষণ যাবত? ২। না	<input type="checkbox"/>
৫	আপনার শ্বাসপ্রশ্বাস জনিত কোন সমস্যা আছে কিনা? ১। হাঁ, কোন ধরনের সমস্যা? ২। না	<input type="checkbox"/>
৬	পালস রেট কত? ১। ৬০ এর নিচে ২। ৬০-১০০ ৩। ১০০ এর অধিক	<input type="checkbox"/>
৭	রেস্পাইরেটরি রেট কত থাকে? ১। ১২ এর কম ২। ১২-২৫ ৩। ২৫ এর অধিক	<input type="checkbox"/>
৮	ওয়ার্ম আপের সময় বমি ভাব অনুভব করেন? ১। হাঁ ২। না	<input type="checkbox"/>
৯	ওয়ার্ম আপের সময় বুকে ব্যাথা অনুভব করেন কিনা? ১। হাঁ ২। না	<input type="checkbox"/>

কুল-ডাউন সম্পর্কীয় তথ্য		
প্রশ্ন নম্বর	প্রশ্ন	উত্তর
১	খেলা শেষ করার পর পালস রেট কত থাকে? ১। ৬০ এর নিচে ২। ৬০-১০০ ৩। ১০০ এর অধিক	<input type="checkbox"/>
২	খেলা শেষে রেস্পাইরেটরি রেট কত থাকে? ১। ১২ এর কম ২। ১২-২৫ ৩। ২৫ এর অধিক	<input type="checkbox"/>
৩	খেলা শেষে বুকে ব্যাথা অনুভব করেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>
৪	কুল ডাউনের জন্য কোন ব্যায়াম করেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>
৫	যদি উপরোক্ত প্রশ্ন হ্যাঁ হয় তাহলে কুল ডাউনে কোন ধরনের ব্যায়াম করে থাকেন? ১। জগিং ২। ওয়াকিং ৩। অন্যান্য	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
৬	এসময় কোন মাংসপেশীর ব্যাথা অনুভব করেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>

অন্যান্য প্রশ্ন		
প্রশ্ন নম্বর	প্রশ্ন	উত্তর
১	কখনো চিকিৎসকের অনুগত হয়েছেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>
২	কোন ধরনের চিকিৎসক দেখিয়েছেন? ১। ডাক্তার ২। ফিজিওথেরাপিস্ট ৩। অন্যান্য	<input type="checkbox"/>
৩	ধূমপান করেন কিনা? ১। হ্যাঁ ২। না	<input type="checkbox"/>
৪	কোন ওষুধ খাচ্ছেন কিনা? ১। হ্যাঁ, কোন ধরনের ওষুধ? ২। না	<input type="checkbox"/>

Permission letter (BKSP)

বাংলাদেশ ক্রীড়া শিক্ষা প্রতিষ্ঠান
জিরানী সড়ক, ঢাকা।
www.bksp.gov.bd

স্মারক নং : ৩৪.০৪.০২০০.০০৬.১৮.০৩৯.১৪/০২৮

তারিখ: ০৩ শ্রাবন ১৪২৬বঙ্গাব্দ
১৮ জুলাই ২০১৯ খ্রি:

প্রাপক: ডাঃ রোকেয়া সুলতানা

অধ্যক্ষ

সাইক কলেজ অফ মেডিকেল সাইন্স এন্ড টেকনোলজি

মিরপুর -১৩, ঢাকা- ১২১৬।

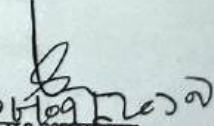
বিষয়: সাইক কলেজ অফ মেডিকেল সাইন্স এন্ড টেকনোলজি বিএসসি ইন ফিজিওথেরাপি
কোর্সের শেষ বর্ষের শিক্ষার্থীদের গবেষণা ও ডাটা সংগ্রহের জন্য সহায়তা প্রদান প্রসঙ্গে।

সূত্র- SIMI/PHY/ERB/24-06-2019,

তারিখ- ২৪/০৬/২০১৯খ্রি।

জনাব,

উপর্যুক্ত বিষয় ও সূত্রের প্রেক্ষিতে জানানো যাচ্ছে যে, ১৮/০৭/২০১৯ তারিখ হতে
২৫/০৭/২০১৯ তারিখ পর্যন্ত সাইক কলেজ অফ মেডিকেল সাইন্স এন্ড টেকনোলজি
শিক্ষার্থীদের গবেষণা ও ডাটা সংগ্রহের জন্য বিকেএসপি কর্তৃপক্ষের সম্মতি জ্ঞাপন করা
হলো। উল্লেখ্য, উক্ত সময় অত্র প্রতিষ্ঠানের কোন যন্ত্রাংশের ক্ষতি সাধিত না হয় সেদিকে
নজর দেয়ার জন্য এবং যাবতীয় নিয়ম-কানুন মেনে চলার জন্য অনুরোধ করা হলো।


নুসরাত শারমিন


উপপরিচালক (ক্রীড়াবিজ্ঞান) অ.দা.
বিকেএসপি।

অনুলিপি:

- ১। মহাপরিচালক মহোদয় (সদয় অবগতির জন্য), বিকেএসপি।
- ২। পরিচালক (প্রশাসন ও অর্থ), বিকেএসপি।
- ৩। পরিচালক (প্রশিক্ষণ), বিকেএসপি।
- ৪। অধ্যক্ষ, বিকেএসপি।
- ৫। উপপরিচালক (প্রশিক্ষণ) বিকেএসপি।
- ৬। ক্রীড়াবিজ্ঞান শাখার সকল কর্মকর্তা।
- ৭। হিসাব রক্ষণ কর্মকর্তা, বিকেএসপি।
- ৮। জনাব.....

Shot on realme 3 Pro

Permission letter (SCMST)

 **SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY**
Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref: SIMT/PHY/ERB/24-06-2019 Date: 24.06.2019

To
Director General
Bangladesh Kira Shiksha Protisthan
Zirani, Savar

Sub: Permission for Data collection

Dear Sir,

Following listed B.Sc. in Physiotherapy students (Final Year) are interested to collect data for their acadademic research purpose in your organization (Bangladesh kira shiksha protisthan). Please allow them to collect data.

Name	Roll	Session	Phone no
Maria akter panna	05	2014-2015	01685292469
A.K.Mehedi Hasan	58	2014-2015	01516180166
Arif Hossain	22	2014-2015	01516153786

Please do needful in these regards.

Bulles
24.06.2019
Principal
SAIC college of Medical Science and Technology
Mirpur-14, Dhaka-1216

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1216. Mobile:01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

Gant chart:

Activities	Dec 2018	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov
Proposal presentation												
Introduction												
Literature review												
Methodology												
Data collection												
Data analysis												
Result												
1 st Progress presentation												
Discussion												
Conclusion and Recommendation												
2 nd Progress presentation												
Communicate with supervisor												
Final submission												