

An Awareness Study on Cardiac Injury during Fitness Exercises: A Study from Tamil Nadu, India

Dr. M. Anitha¹; Dr. R. Anusha²; Dr. P. Allwin Christuraj³; Dr. S. Keertheesvar⁴; P.B.Anuraj⁵; R.Yowesh⁶

1. Professor, Department of Nutrition, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences and Hospital, Kulasekharam, (T.N.) India.
2. Professor, Department of Naturopathy, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences and Hospital, Kulasekharam, (T.N.) India.
3. Professor, Department of Massage and Aromatherapy, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences and Hospital, Kulasekharam, (T.N.) India.
4. Lecturer, Department of Fasting & Diet Therapy, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences and Hospital, Kulasekharam, (T.N.) India.
5. Medical Student, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences and Hospital, Kulasekharam, (T.N.) India.
6. Medical Student, Sree Ramakrishna Medical College of Naturopathy and Yogic Sciences and Hospital, Kulasekharam, (T.N.) India.

Abstract:- Regular exercise lowers the risk of coronary heart disease, but in vulnerable individuals, it can also temporarily and acutely raise the risk of acute myocardial infarction and sudden cardiac death. In addition to discussing potential cardio-vascular workout compilations, their pathological substrate, incidence, and measures to mitigate them, this scientific statement offers suggestions. This research was conducted at sree ramakrishna medical college of naturopathy and yogic sciences and hospital kulasekharam, Tamil Nadu, India. Males aged 25 to 40 are the subjects of this study. After outlining the goal of the study, verbal consent was obtained. Thirty respondents filled out this survey. The survey consists of thirty questions. The questionnaire's characteristics encompassed gastrointestinal disorders, heart and respiratory conditions, joint pains, addictions, and physical activity. Male volunteers in the study who were hesitant or uncooperative were not allowed to continue with the study. Our research indicates that people require greater education about the negative effects of supplements and the problems they might cause, as well as about eating a healthy diet, drinking enough water, and getting enough sleep. More advice is needed regarding cardiac episodes that occur while exercising. To improve the general health and well-being of fitness seekers, future healthcare initiatives should concentrate on these areas.

I. INTRODUCTION

Regular physiological activity is widely advocated by the medical community in part because substantial epidemiological, clinical, and basic scientific evidence suggest that physical activity and exercise training delay the development of atherosclerosis and reduce the incidence of coronary heart disease events. Nevertheless, vigorous physical activity can also acutely and transiently increase the risk of acute myocardial infarction and sudden cardiac death in susceptible individuals. The goal is to provide

health care professionals with the information they need to advise patients more accurately about the benefits and risks of physical activities. The medical community strongly supports regular physiological activity, in part because of strong evidence from basic science, clinical, and epidemiological studies that exercise training and physical activity can postpone the onset of atherosclerosis and lower the risk of coronary heart disease events. However, in vulnerable individuals, intense physical exercise can also temporarily and acutely raise the risk of acute myocardial infarction and sudden cardiac mortality. The intention is to arm medical practitioners with the knowledge they need to more correctly counsel patients regarding the advantages and disadvantages of physical activity. The majority of cardiac incidents in young people are caused by inherited or congenital cardiovascular abnormalities. In contrast, these episodes in adults are primarily caused by atherosclerotic disease. The research population's disease prevalence has an impact on the outdated rate of exercise-related sudden cardiac mortality. The pathophysiology of endurance exercise training and its negative effects on the heart, including fibrosis, atrial and ventricular arrhythmias, and sudden cardiac death. It's possible that long-term, intense endurance training's mechanical and metabolic strains are significantly contributing to pathophysiology.

II. PATHOPHYSIOLOGY

Regular exercise lowers the risk of coronary heart disease, but in vulnerable individuals, it can also temporarily and acutely raise the risk of acute myocardial infarction and sudden cardiac death. In addition to discussing potential cardio-vascular workout compilations, their pathological substrate, incidence, and measures to mitigate them, this scientific statement offers suggestions. The majority of cardiac incidents in young people are caused by inherited or congenital cardiovascular abnormalities. In contrast, these episodes in adults are primarily caused by atherosclerotic disease. The research population's disease prevalence has an

impact on the outdated rate of exercise-related sudden cardiac mortality. Physiological and negative cardiac vascular effects of endurance exercise training, including fibrosis, atrial and ventricular arrhythmias, and sudden cardiac death. Physiological and negative cardiac vascular effects of endurance exercise training, including fibrosis, atrial and ventricular arrhythmias, and sudden cardiac death. It's possible that long-term, intense endurance training's mechanical and metabolic strains are significantly contributing to pathophysiology. Excessive and prolonged exercise training produces a lot of free radicals, probably more than the body can handle. As a result, these people are more vulnerable to oxidative stress and momentary myocyte dysfunction, which may also negatively alter the quantity and quality of desmosomes and other cell anchoring structures. Hours of intense exercise and elevated cardiac demands cause the right atrium and right ventricle to dilate as a result of this process. This cycle of repetition may cause immune cells, such as mast cells, macrophages, and lymphocytes, to release cytokines, which in turn tell myofibroblasts to multiply and release procollagen, which is then cross-linked to generate mature collagen. Fibrosis gradually develops as a result, spreading more widely throughout the major arteries and appearing in patches inside the myocardium. Chronically high levels of endurance exercise training and competition also cause a number of other systemic disruptions, such as the episodic release of excessive catecholamines, which causes coronary vasoconstriction, persistent heart rate elevations during prolonged aerobic exercise training sessions, which reduces the coronary arteries' diastolic filling time, increased oxygen demand, altered free fatty acid metabolism, lactic acidosis, and metabolic disturbances. In those who are vulnerable, the heart might not be able to withstand the intense endurance exercise. The right heart's preload and afterload increase during an extreme endurance event in susceptible

individuals because the heart may not be able to handle the prolonged and sustained excessive physiological demands. This causes the heart to stretch and subsequently dilate the chambers in response to these hemodynamic changes. The most common cause of sudden mortality in individuals under thirty is hypertrophic cardiomyopathy. While sudden death frequently happens during severe physical activity, the majority of patients with hypertrophic cardiomyopathy are asymptomatic and might pass away while at rest or after minor physical exertion.

III. MATERIALS AND METHOD

This research was conducted at sree ramakrishna medical college of naturopathy and yogic sciences and hospital kulasekharam, Tamil Nadu, India. Males aged 25 to 40 are participating in the study. After the goal of the study was described, verbal consent was acquired. Thirty people answered this questionnaire. The survey had thirty questions on it. The questionnaire's parameters covered joint complaints, cardiac and respiratory conditions, gastrointestinal disorders, addictions, and exercise. Due to male participants' unwillingness or uncooperation, they were not allowed to continue with the study.

IV. RESULT

The male respondents ranged in age from 18 to 25. In total, there are thirty in total. Table 1.1 shows that 86.66% of respondents have a fitness goal, whereas 13.33% do not have a fitness goal. 83.33% exercise regularly and do not exercise regularly, 16.66%.70% of people prefer lifting exercises, whereas 30% do not prefer lifting exercises.20% of people had prior exercise related injuries, while 80% not have prior exercise related injuries.

Table 1 An Awareness Study on Cardiac Injury during Fitness Exercise

S.NO	CONTENT	YES(%)	NO(%)
1	Fitness goal	86.66%	13.33%
2	Regular exercise	83.33%	16.66%
3	Prefer lifting exercise	70%	30%
4	Have any previous exercise injuries	20%	80%
5	Have any medication	20%	80%
6	Have proper sleep	56.66%	43.33%
7	Have constipation issues	10%	90%
8	Intake 3-4 liters of water per day	90%	10%
9	Feeling tired after workout	43.33%	56.66%
10	Habit of smoking	6.66%	93.33%
11	Prefer to do workouts in gym	76.66%	23.33%
12	Doing push ups regularly	76.66%	23.33%
13	Have cardiac complaints	3.33%	96.66%
14	Experiencing chest pain during workouts	23.33%	76.66%
15	Have high (or) low blood pressure	16.66%	83.33%
16	Have surgical history	10%	90%
17	Have breathing complaints	10%	90%
18	Have diabetes mellitus	Nil	100%
19	Have joint problems which are aggravated by workouts	16.66%	83.33%
20	Prefer morning workouts	70%	30%
21	Having Supplements	40%	60%

22	Spend minimum 30 minutes for workouts	76.66%	23.33%
23	Are you obese	13.33%	86.66%
24	Consume alcohol	3.33%	96.66%
25	Have ever received guidance for preventing cardiac injuries during fitness training	36.66%	63.33%
26	Awareness of the maximum heart rate during exercise	46.66%	53.33%
27	Knowledge of water intake and proper nutrition during exercise to prevent heart problems	73.33%	26.66%
28	Ever experienced heart related incident during fitness activities	16.66%	83.33%
29	Awareness of preventing measures to reduce the risk of heart injuries during fitness activities	63.33%	36.66%
30	Know the importance warm up exercises	96.66%	3.33%

Twenty percent of people use medicine, while eighty percent do not, while eighty.56.66% have enough sleep, whereas 43.33% don't get enough sleep. Experience problems with constipation 90% and 10% of people do not have constipation.90% of people drink three to four liters of water each day, while 10% do not drink three to four liters of water each day.43.33% of people felt fatigued after working out, and not exhaustion following exercise is 56.66%. Smoking habit 6.66% of people and 93.33% of people do not smoke. Work out in a gym 23.33% and 76.66% of people do not prefer to work out at a gym. Only 23.33% of people do push-ups infrequently, and 76.66% do it frequently. I experienced heart issues 3.33% and 96.66% of the people there were no complaints of heart issues. Chest pain during working out, 23.33% and 76.66% of people report not having chest pain. Experiencing issues with blood pressure, 83.33% and 16.66% did not have these issues. Possess surgical experience of them, 10% and 90% do not have this surgical background. 10% experience problems with breathing difficulties. Nobody has diabetes mellitus 100%. Have joint issues that exercising exacerbates 16.66% and 83.33%, this symptom is absent.70% of people prefer morning workouts, whereas 30% don't prefer morning workouts.40% of people have supplements, and 60% do not. Spend at least thirty minutes working out. Spend a minimum of 30 minutes for workouts, 76.66% and 23.33% do not spend a minimum of 30 minutes on workouts.13.33% of people are obese, but 86.66% are not obese. Drink alcohol, 96.66% abstain from alcohol, 3.33%. Have you ever been given advice on how to avoid cardiac problems 63.33% and 36.66% do not have any instructions. Recognizing your maximal heart rate when working out, 53.33% and 46.66% of people were unaware. Understanding how much water and what to eat when exercising to avoid heart problems, 73.33% and 26.66% of them do not know how much water or what constitutes a healthy diet. Have you ever had a cardiac episode while exercising 83.33% and 16.66% of respondents said they have never had a cardiac episode while exercising. Understanding preventative strategies to lower the risk of cardiac damage when engaging in fitness activities, 36.66% and 63.33% did not know these preventative strategies. Recognizing the value of warm-up activities, 96.66% and 3.33% do not understand the value of warm-up exercises.

V. DISCUSSION

The majority of people exercise regularly, 83.33%, and have achieved their fitness goal, 86.66%. Seventy percent of them favor lifting exercise.20% of people have never had an exercise injury before, and take any medication 20%.56.66% get enough sleep, whereas 43.33% do not get enough sleep.90% of gym-goers are aware that they should drink three to four liters of water each day. Following an exercise, 43.33% felt exhausted.76.66% of respondents prefer working out at a gym, while 76.66% often perform push-ups. Only 3.33% of people report having cardiac symptoms, while 23.33% report having chest pain when working out. Only 16.66% of people complained about their blood pressure. Nobody has diabetes mellitus. Exercise-induced arthritic joint issues are less common, 16.66% and also 70% of them enjoy working out in the morning.40 percent of them have gym supplements.76.66% of people work out for at least half an hour.36.66% of respondents have ever gotten advice on how to avoid cardiac damage when exercising. More people who work out at the gym are aware of the importance of drinking enough water and eating right to avoid heart disease. More people who work out at the gym are aware of the importance of drinking enough water and eating right to avoid heart disease, 73.33%. Fewer people, 16.66%, have ever had a cardiac episode while engaging in physical activity. Fewer persons, 36.66%, are unaware of the preventative steps that can be taken to lower the risk of cardiac damage during fitness activities.63.33% are aware of preventative steps that can be taken to lower the risk of cardiac damage during fitness activities.

VI. CONCLUSION

Our research has shown that they have a satisfactory level of awareness. They require more information on the negative effects of supplements and the issues they can cause, as well as about eating a healthy diet, drinking enough water, and getting enough sleep. More advice is needed regarding cardiac episodes that occur while exercising. To improve the general health and well-being of fitness seekers, future health care initiatives should concentrate on these areas.

REFERENCES

- [1]. Cardiovascular Damage Resulting from Chronic Excessive Endurance Exercise. Harshal R. Patil, MD, James H. O'Keefe, MD, *Mo Med*. 2012 Jul-Aug; 109: 312–321.
- [2]. Lee DC, Pate RR, Lavie CJ, Blair SN. Running and all-cause mortality risk - is more better? *Medicine & Science in Sports & Exercise*. 2012.
- [3]. Schwartz J, Merkel-Kraus S, Duval S. Does elite athleticism enhance or inhibit coronary artery plaque formation. Paper presented at: American College of Cardiology 2010 Scientific Sessions; March 16, 2010; Atlanta, GA.
- [4]. Staff Mc. MarathonGuide.com. New York: Web Marketing Associates; 2008. USA Marathoning; 2007.
- [5]. Praphatsorna P., Thong-Ngama D., Kulaputanaa O., Klaikaewb N. Effects of intense exercise on biochemical and histological changes in rat liver and pancreas. *Asian Biomedicine*. 2010;619–625.
- [6]. Schwartz J., Merkel-Kraus S., Duval S. 2010. Does elite athleticism enhance or inhibit coronary artery plaque formation: Paper presented at: American College of Cardiology 2010 Scientific Sessions. Atlanta, GA.
- [7]. Deaths in triathletes: immersion pulmonary oedema as a possible cause Richard E Moon, Stefanie D Martina, Dionne F Peachier, William E Kraus, 2016.
- [8]. Cardiac Arrest during Long-Distance Running Races Jonathan H. Kim, M.D., Rajeev Malhotra, M.D., George Chiampas, D.O., Pierre d'Hemecourt, M.D., Chris Troyanos, A.T.C., John Cianca, M.D, 2012.
- [9]. An epidemiological investigation of training and injury patterns in triathletes
- [10]. Stefan zwingenberger, Roberto D. valladares, Achimwalther, Heidrun beck, Maik stiehler, stephan kirschner, Martin engelhardt, & Philip kasten, 2013.
- [11]. Cardiac arrest during long-distance Running race, Jonathan H. Kim, M.D, Rajeev Malhotra, M.D, George Chiampas, D.O, Pierre d'Hemecourt, M.D, 2012