



## **Sudden Cardiac Death and Its Prevention Ways among Athletes According to Iranian Traditional Medicine**

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(Received 14 Jan 2013; accepted 12 Feb 2013)

### **Abstract**

In the modern medical era sudden cardiac death and its causes among athletes have been described. Finding appropriate preventive ways from this tragic event is so important in sports medicine. According to different trials and observations, there are numerous reasons and some preventive strategies. Historically, sudden cardiac death among athletes had been described several hundred years ago by ancient physicians. The first physician who described this topic completely and recommended some preventive ways is Ibn Abi Sadiq al-Neishaburi. In this article, his opinion has been discussed.

**Keywords:** Sudden Cardiac Death, Athlete, Exercise, Iran, Traditional Medicine

### **Introduction**

Although exercise has been introduced as a preventive factor from diseases both in modern and medieval medicine (1, 2), rarely, sudden death, as a tragic event, occurs during exercise among athletes. The review of historical documents suggests that Sudden Cardiac Death (SCD) among athletes is as old as human history (3). Now, cardiovascular causes of this event have been known(4) and some strategies are recommended in order to determine athletes who are at risk such as obtaining an exact past medical history(5) and family history(6) and also doing both physical and paraclinical (electrocardiography) examination for all athletes initially (5). Despite these strategies,

sometimes the main reason remains unknown and unfortunately SCD occurs (4) so that prevention from sudden death in this group remains one of the most debated topics in sports medicine (5).

Although in modern medical history sudden death among athletes was reported for the first time within 1845–1909, a review of the old medical documents determined that it had been originally described by the Iranian physician, Ibn Abi Sadiq al-Neishaburi who gave a thorough description of SCD among professional athletes and suggested some preventive ways (7) Ibn Abi Sadiq al-Naishaburi, a pupil of Avicenna, was an 11th century Persian physician from Nishapur in Khorasan.

He is mostly famous for composing a popular commentary on the Aphorisms of Hippocrates, so he was known in some circles as "the second Hippocrates" (Buqrat al-thani). He has described SCD in his book titled "Sharḥ Fusūl Ibuqrāt", or "Commentary on the Aphorisms of Hippocrates" (8). Hippocrates said that too much overweight is dangerous among professional too obese athletes because the condition of these athletes is not normal. Six centuries later Galen explained Hippocrates's issue and indicated to abnormal body condition and sudden death and short age among them (3). Ibn Abi Sadiq wrote a detail account on Hippocrates's issue. According to his viewpoint in athletes who have too much overweight, however this overweight often is due to muscular mass, vessels are in full stretched condition. Such vessels have been accommodated with increasing in blood volume and rapid blood flow due to heat increasing during exercise.

In traditional medicine, there is a condition named "Imtela" which means "Filling" in which humors amount will be raised and filled body spaces such as vessels. There are approximately ten factors as a result of which Imtela occurs. Imtela occurred by any reason, is too dangerous in athletes with too much overweight because regularly their vessels are in full adaptation so that cannot rapidly be accommodated with enhanced blood volume following Imtela so according to strength of vessels' wall, two conditions may occur: The first is rupture of the great vessel if the vessels' walls are loose and thin; the second is occurring the fatal dyspnea, which may result in death as rapid as possible, if the vessels' walls are both dense and thick. Sometimes as rapid as fatal dyspnea, SCD will occur if a lot of blood return to heart because the heart is only space where vessels can drain their blood and the heart cannot tolerate this volume of blood before which, there should be a kind of tachycardia (7). Two centuries later Ibn al-Nafis Qarshi (1210-1288AD), who is mostly famous for being the first to describe the pulmonary circulation of the blood (9) has described Hippocrates's issue too. His description is near to Ibn Abi Sadiq's issue about increasing in blood volume and insufficient vessels' spaces among such

athletes during exercise in condition of Imtela, which results in vessels' rupture or draining of blood to other spaces. In addition, filling of whole body with humors due to Imtela, makes a limitation for organs' absorption which results in humors putridity as a result of which, body condition will change and tends to be abnormal (10). As a discussion, although ancient opinions about SD in overweight athletes seems to be different from what we know today, according to this study's data, there are at least four common subjects between medieval and modern medicine: 1-Some athletes are at risk for SD; 2-Cardiovascular causes are the most common reason for this event; 3-Vascular rupture may be a reason of SD; 4-There are some underlying factors such as vascular abnormalities and a kind of tachyarrhythmia. According to these opinions, Imtela plays an important role to occur SCD. Imtela which owns particular classification, some causes, both diagnostic and preventive ways and some treatments, is discussed as an important topic in Iranian traditional medicine resources such as "The Canon of medicine" authored by Avicenna (11). Imtela occurred due to unhealthy life style and is diagnosed through obtaining an exact observation includes: exactly physical examination, knowing about patients' nutrition qualitatively and quantitatively and their habits, and exactly inspection of radial pulse to determine both vessels' strength and other items in relation with Imtela. Treatment includes appropriate diet, cupping, herbal therapy and some other therapies (11).

As a conclusion, if we accept Imtela as an influential factor for SCD occurring among athletes, diagnosis of Imtela will be the first step in order to determine the athletes who potentially are at risk for SCD, which is easy, safe and low-cost. The second step which performs in order to prevent from SCD is treatment of Imtela among diagnosed cases, which is neither aggressive nor expensive too; on the other hand, according to Iranian traditional medicine, there are several distinct strategies for prevention and treatment of Imtela that may lead to new methods of prevention of SCD.

## Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

## Acknowledgments

This study was a part of postgraduate thesis entitled: "The exploration of principles and rules of exercise to health preservation and promotion according to Iranian traditional medicine" and was supported by a grant from Tehran University of Medical Sciences. The authors declare that there is no conflict of interest.

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