REPORT

FINA APPOINTED TASK FORCE

PART 7 – FRANCIS CRIPPEN

1. INTRODUCTION

This part is dedicated to Francis Crippen's medical background and records.

2. ANALYSIS OF FRANCIS CRIPPEN HEALTH CONDITIONS BEFORE THE EVENT

Francis Crippen was reported to have undergone during his sports career several medical examinations. On day March 30th, 2011, the mail containing the medical records of Fran Crippen was sent from the family to the attention of the chairman of FINA Task Force, Mr. Gunnar Werner. The medical records included three files.

From the analysis of the available medical documents it appears that Fran Crippen medical course was substantially unremarkable during childhood and adolescence.

The most relevant medical finding is the diagnosis of exercise-induced asthma documented in 2010.

Exercise-induced asthma is not rare in elite swimmers and does not represent, when efficiently treated, reason for contraindication to competitive sport participation. It is, indeed, unlikely, although cannot to be excluded that the occurrence of an exercise-induced asthma exacerbation may have contributed, in exceptional circumstances, to the progressive incapacitation of the athlete after a prolonged and intensive effort.

With regard to cardiovascular system, the Task Force notices that only one electrocardiogram was performed when Francis Crippen was 13 days old. Subsequently, no cardiovascular investigations, electrocardiogram, or imaging testing (such as echocardiography) were ever asked by the examining physicians or performed by the athlete on voluntary basis. Therefore, there is no way to support (or to exclude) the presence of an underlying electrical abnormality, or silent cardiomyopathy that might have developed during adolescence or young age.

3. REPORTS RELATED TO CRIPPEN DURING THE RACE

Statements given below are to be considered as possible signs of progressive incapacitation of Francis Crippen.

Documents state:

- Petar Stoychev, swimmer in Fujairah (see Appendix D-12) wrote: “The last time I spoke to Fran was at the end of the second lap. We were swimming at the tail of the main group. He asked me how I felt. I replied that I felt bad and said to him “go ahead, swim, swim”. I was surprised that he was at the end of the group. Usually he swims in the front.
- On the last pontoon, Francis Crippen was seen by Mr Aleksandr Beresnyev, a Russian coach and father of Beresnevoj Olga, a female participant in Fujairah. In his statement (see Appendix D-08), Mr Beresnyev writes that he as well as coaches Fesenko and Yevseyev saw Francis Crippen swimming very slowly, which was not his habit. During the same time the attention on the people of the pontoon was distracted by the boat willing to bring the coaches from the second pontoon to the shore. He answered the boat driver that the female competitors were arriving and that only after having assisted his daughter, he would step into the boat. He feels very sorry that his attention was distracted.
- Nobody saw him raising his hand or call out in any way.
- He told his handler after 8 km that he was feeling thirsty.
- Crippen was seen in the middle of the first group at the end of the first round. He then was seen at the end of the group at the second and third round. At the fourth lap it was reported that he only mentioned to his handler that he was thirsty and did not say he was feeling bad, but soon after it was noticed that he was - swimming more slowly than has been his usual.

The Task Force felt that because the Lifeguards performing Cardio Pulmonary Resuscitation (CPR) reported a smell of alcohol it is necessary to address this comment. We verified with other competitors and team mates that no alcohol was consumed. The Task Force believe that the smell of alcohol reported in the documents of the lifeguards can be caused by distillation of food and drinks present in the stomach of the athlete.

4. AUTOPSY REPORTS

One day after the tragic accident, on 24/10/2010, a limited autopsy was done on Francis Crippen by Dr. Osman Abdul Hamid Awad, Forensic Consultant of Fujairah on behalf of the Fujairah Court. The Forensic Medical Report is given in Appendix C-06.

The report indicates that “there was no sign of violence, physical attack or resistance. The presences of traces of foam around the mouth, nose and mucus congestion in the lungs are the evidential signs of drowning. The patient has been subjected to severe stress and fatigue of the muscles of the body while swimming, which was followed by drowning by asphyxiation. The cause of death was drowning by asphyxiation.”

The Death Certificate issued by the UAE Ministry of Health indicates drowning by asphyxiation. The Death Certificate is given in Appendix C-13.

On the request of the Crippen family, Francis Crippen underwent an extensive autopsy examination by Mr Ian C. Hood, MB, ChB, Forensic Pathologist (USA). The Report of the second autopsy is given in Appendix C-20.

The autopsy report concludes the following: This decedent, an experienced high level long distance swimmer and winner of international open water long distance swimming events, was participating in a 10 kilometer ocean swimming event on the coast of the United Arab Emirates when he failed to complete the race and his body was subsequently found underwater in the sea a few hundred yards from the finish by divers joining fellow competitors who had returned to look for him. Local climatic conditions were extremely hot with ocean water temperatures recorded in the mid 80 degrees Fahrenheit and air temperatures above 100 degrees Fahrenheit and several competitors, who were all world-class athletes, needed urgent medical attention and rehydration. The body of this decedent was subjected to a limited autopsy and embalmed before transport back to his hometown of Conshohocken where, at the request of his next of kin this autopsy was performed. Autopsy disclosed the embalmed body of a tall, robust, muscular young adult male previously subjected to a limited autopsy ... but no evidence of any significant trauma on the heart was found. The brain was slightly swollen but all of the internal organs were in excellent anatomic condition. Toxicological analysis of embalmed vitreous found only embalming chemicals, caffeine and theobromine, common components of tea and cocoa products. No other significant trauma or pathology was noted in or about the body and death is attributed to drowning. The decedent was a very experienced and powerful swimmer in open water and could be expected never to have drowned unless overcome by some other condition and, given the prevailing climate, that condition was almost certainly heat exhaustion induced by exertion in an environment in which he could not transfer heat from his body.

Mr Hood concluded that the cause of death was 1a. Drowning and 1b heat exhaustion.

5. COMMENTS FROM THE TASK FORCE

The Task Force believes that the following considerations should be taken into account regarding the cause of the Francis Crippen's death as reported in the autopsy.

According to the scientific literature, the most common cause of sudden death in a young athlete is cardiac abnormalities and, namely, cardiomyopathies, or congenital artery anomalies, or channelopathies. The main source of medical information is the autopsy report signed by Mr Ian C. Hood, MB, ChB, forensic pathologist for the Forensic Pathology Consultants Inc. dated 10/29/10. From this report the most relevant information is the lack of any evident structural cardiac disease. The heart gross morphology examination reports the weight to be 400 g, which is compatible either with a mild hypertrophy due to athletic conditioning (i.e., athlete's heart), but also may represent a mild expression of hypertrophic cardiomyopathy (HCM). There is no information, unfortunately, regarding the thickness of both left and right ventricular walls, or left and right ventricular cavity size. The histology only describes mild myofiber hypertrophy, but there is no mention of histological abnormalities suggestive for HCM or arrhythmogenic right ventricular cardiomyopathy (ARVC), which we should assume, therefore, were absent. In conclusion, the presence of cardiomyopathies, such as HCM or ARVC with mild morphologic cardiac alterations, is unlikely to be present, but cannot be excluded.

There is clear mention of the normal origin and course of the coronary arteries and their patency, and no mention of intra-myocardial course (myocardial bridge) of any of coronary arteries. Therefore, the presence of coronary artery anomalies can be excluded with reasonably certainty.

Finally, the channelopathies, i.e., inherited disease of the cellular Na, K, Ca exchange (for example, long QT syndrome, or Brugada syndrome) at risk for sudden cardiac death during exertion (and in the warm environment in case of Brugada), cannot be ascertained by autopsy. These diseases could be eventually diagnosed in an ECG tracing and can be searched with DNA analysis on a myocardial specimen, if any is still available.

The sound conclusion derived from the autopsy report is that a patent cardiac disease was not reported. This panel, however, believes that mild expression of cardio-myopathies, namely hypertrophic cardiomyopathy, or undetected channelopathies, cannot be excluded with certainty.

The autopsy describes that “major bronchi, trachea and larynx, ... are intact and grossly unremarkable” and does not report any change in the bronchial or bronchiolar airways. Pertinent descriptive histology is lacking

6. CAUSE OF DEATH

The Task Force is of the opinion that the following factors may be implicated in the death of Francis Crippen:

- **Exhaustion and fatigue**. Reports from other athletes and coaches indicate that Francis Crippen may have been unusually tired during the race. Competition and ranking motives may have pushed the athlete to continue the race.
- **Hyperthermia**. Both the air and water temperatures were very high and is a reason that body heat cannot be lost and is accumulated, raising body temperature and impairing the neuro-muscular coordination
- **Hypo-hydration**. In such a warm environment, the losses of fluid may not be completely restored and the ultimate consequence is the reduction in circulating blood volume, which cause a drop in blood pressure, and central nervous system perfusion, which can contribute to occurrence of unconsciousness.

The Task Force is of the opinion that the combination of high intensive physical exercise and fatigue, high water temperatures and dehydration can be seen as the most likely factors that favoured the progressive exhaustion that ultimately led to a loss of consciousness.

With regard to the diagnosis of exercise-induced asthma recently diagnosed (2010), the Task Force acknowledges that this respiratory disorder is relatively common among swimmers and does not represent, when efficiently treated, contraindication to competitive sport participation.

It is, indeed, unlikely, although cannot to be excluded, that the occurrence of an exercise-induced asthma exacerbation may have contributed, in exceptional circumstances, to the progressive incapacitation of Francis Crippen during such a prolonged and intensive effort.

In the possible, although unproven, case that an underlying cardiac abnormality was present, the environmental determinants above described may have favoured the occurrence of progressive exhaustion that led to Francis Crippen unconsciousness.

7. CONCLUSION

The Task Force is of the opinion that underlying cardiac abnormality (mild expression of cardiomyopathies, or undetected channelopathies), cannot be excluded with all certainty.

The causative role of exercise-induced asthma, recently diagnosed and treated appropriately, is unlikely, although cannot be excluded with certainty that occurrence of an exercise-induced asthma exacerbation may have contributed, in exceptional circumstances, to the progressive incapacitation of Fran Crippen.

However, even in the absence of these factors, the combination of high intensive physical exercise and fatigue, high air and water temperatures and dehydration can be seen as the most likely reasons why Crippen had a progressive incapacitation that ultimately led to a loss of consciousness in the water which resulted in drowning.