

# **AN APPROACH TO AEROMEDICAL RESCUE: BRAZILIAN AIR FORCE, AIR TRAFFIC CONTROL AND SEARCH AND RESCUE TEAMS**

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**Abstract:** Aeromedical rescue is a specialty that aims to rescue people who need emergency care. This work aims to present an approach to the subject, in terms of the functions of the Brazilian Air Force (FAB), which is linked to most aeromedical rescue operations. Context, FAB search and rescue teams promote greater accuracy in locating victims, aircraft and accident vessels. In addition, the communications and coordinates guaranteed by air traffic controllers promote greater safety and traffic flow. From this perspective, this study sought to highlight and discuss the relationship between aeromedical rescue and the Air Force.

**Keywords:** military, search and rescue, aerospace medicine

## INTRODUCTION

There is a great shortage of literature on the military aspect of air medical rescue. It was not possible to find any scientific work that demonstrated the importance that such professionals have for society.

In this sense, it is necessary to mention the FAB's areas of action in the rescue. Topics of greater relevance will be pointed out, such as air traffic control behind each aircraft, which guarantees priority for civil and military flights in aeromedical operations (BRAZIL, 2022); in addition to the rescue carried out by the Aeronautics Search and Rescue (SAR) team (BRAZIL, 2019), as well as some particularities of each of these specialties.

Thus, it was understood that it was necessary to carry out this work, since rescue in the military area is little explored, with numerous content options and extremely relevant for the academic community and for society in general.

## METHODOLOGY

This is an Integrative Literature Review, with a qualitative approach and use of the

six stages proposed by Mendes; Silveira and Galvão (2008), which allows synthesizing results obtained on a topic through evidence-based practices. The following databases and information sources were used: MEDLINE, ScIELO, Lilacs and DECEA Publications, where legislation of the Brazilian Air Force can be found. Articles, theses and aeronautical regulations were considered, from 2012 to 2022. The descriptors used were: Military, Search and Rescue, Aerospace Medicine. Nine articles were found, of which six were excluded for not addressing the topic. As a continuation, reading of the remaining articles and legislation of the FAB was carried out for analysis and relationship with the theme.

## RESULTS AND DISCUSSIONS

From flight planning, through take-off, en-route flight, descent, clearances and even landing, every aircraft, civil or military, needs an air traffic controller behind the radar screen to ensure the safety and fluidity of this traffic. This fact occurs with even greater priority for the so-called humanitarian mission flights: the aircraft transporting or intended to transport a seriously ill or injured person, in need of urgent medical assistance, or a vital organ destined for transplantation in a human body (BRAZIL, 2022).

The expansion of aviation leads to increased traffic, which creates greater demand for air traffic control professionals. Both civil and military aviation have flight controllers issuing authorizations that guarantee that the flight is safe from the pre-planning phase until after landing (GOMES et al, 2013). Therefore, the FAB has several teams of Air Traffic Controllers, who work in an operating system 24 hours a day, to guarantee the safety of those involved in air medical rescue missions. For humanitarian mission aircraft, priorities are guaranteed, such as flying in airspace with reduced minimum vertical separation

(RVSM) and priorities for landing (BRAZIL, 2022). In addition, there are several Letters of Operational Agreement (CAOp) between civilian aeromedical rescue companies and Air Navigation Service Providers (PSNA), which regulate facilities that aircraft involved in rescues have so that there is greater agility in the flight from the planning and submitting the flight plan.

Nevertheless, the origin of air medical transport and Aerospace Medicine goes back to the history of War Medicine with its assistance to the wounded in battles (PASSOS et al, 2013). In the First World War, the seriously injured were transported in fixed-wing aircraft, in a rudimentary way and without any assistance (SUEOKA, 2021). With the passage of time and the advent of technology, equipment was improved and fixed and rotary wing aircraft became true aerial ICUs, prepared for the rescue and transport of the sick. With this and the increase in aircraft traffic, it becomes necessary to train controllers to maintain the safety of the team that is in flight, directly caring for the patient, being invisible assistants in the operation.

In Brazil, aeromedical removal began in the FAB, with the Search and Rescue Service, in 1950, and is still linked to the Air Force. Thus, the importance of the SAR team must be highlighted. Traditionally, Search and Rescue is defined as a set of actions related to the location of aircraft, vessels and their occupants, returning survivors to safety, and providing assistance whenever there is danger to human life (BRAZIL, 2019).

According to ICA 64-7 (BRAZIL, 2016), the Aeronautical Rescue Coordination Center (ARCC) is the body in charge of promoting the efficient action of SAR services and coordinating the performance of operations within its area of responsibility. SAR teams work, in general, assisting in rescue operations in the area of jurisdiction of each national

ARCC. When there is information about a possible aeronautical accident, SAR rescue operations begin. To this end, the emergency phases of an aircraft are considered, according to ICA 100-37 (2020):

Uncertainty phase, situation in which there is doubt as to the safety of an aircraft and its occupants; Alert phase, where there is apprehension regarding the safety of the aircraft and its occupants; Danger phase, in which there is reasonable certainty that an aircraft and its occupants are threatened by serious and imminent danger and require immediate assistance (BRAZIL, 2020, p.29).

The ARCC have a direct link with Air Traffic Services bodies. This way, in the event of one of the emergency phases or an accident, rescue operations are started in a joint and cohesive manner, where one collaborates with the other so that the victims return to safety as soon as possible and the operation is completed successfully.

When an accident occurs, the ARCC must designate the units on the scene to coordinate actions that guarantee the safety and efficiency of air and surface operations, carrying out the planning and execution of the mission. Planning refers to determining the search area, using rescue resources, planning first aid for survivors, delivering food and medication, moving victims to the place of medical care and returning to safety. During execution, SAR resources are moved to the scene, searches are carried out, survivors are rescued, aircraft or vessel in distress are assisted, emergency assistance is provided to survivors and victims are referred to medical teams. Rescue operations continue until all victims are located and all survivors return to safety (BRAZIL, 2019).

## FINAL CONSIDERATIONS

The Brazilian Air Force is involved in aeromedical rescue missions, with personnel trained to do so, which impacts on

maintaining the safety of victims and on the result of care. Likewise, it is evident that the function performed by air traffic controllers is a fundamental part so that an incident or aeronautical accident does not occur with aircraft on a humanitarian mission. This is due to the fact that procedures related to flight safety rules require the ability of these professionals to prioritize rescue operations in favor of life. In addition, search and rescue teams help with personnel, equipment, area knowledge and direct communication with other related agencies, promoting greater accuracy and speed in rescue operations. It must be noted that the FAB promotes the improvement of its team and has the necessary equipment to carry out rescue operations.

With this, we highlight the need for the work of the multidisciplinary team, the SAR and the flight control, jointly, so that the victims are properly attended to and that the rescue occurs without interurrences. Since it is known that in-flight rescue and care operations are extremely difficult, it is worth mentioning the expertise of these other professionals who remain behind the scenes so that everything happens safely and quickly.

Thus, it is concluded that more studies on the subject are necessary due to the lack of research in this area, in order to strengthen and bring to society the knowledge and subsequent relevance of the work performed by these professionals.

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