In 18th century, people who had to work during the night were called antipodes, indicating their opposite way of living compared to the rest of the population. Nowadays, the 24-hour economy, ongoing globalization and technological developments have led to the fact that about 19% of the workforce has to work during the night, and 17% is involved in work schedules with permanent or rotating shifts. In the airline industry, an even higher percentage of employees are exposed to a variety of irregular working hours or time zone crossings. In general, it has been shown that on the short-term, irregular working hours can lead to fatigue, sleep loss, and digestive disturbances. More chronic health effects include gastrointestinal, reproductive, metabolic and cardiovascular disorders. The first goal of this thesis therefore was to better determine the health effects of exposure to irregular working hours among employees in the airline industry. The second objective was to reduce the impact of exposure to irregular working hours, by developing and evaluating a mobile health intervention aimed at reducing fatigue, and improving health-related behaviour.