POSITION STATEMENT
ON
AIRCRAFT CABIN PRESSURE

In the first decades of the 20th Century, when aviation was in its early days, aeronautical engineers and aviation medicine practitioners explored the question of what would constitute an acceptable cabin altitude. Although there are no precise records of their deliberations, the literature does indicate that the agreed maximum cabin altitude of 8,000 feet was a compromise taking into consideration aircraft design, operational requirements, and human performance. Practically every regulatory agency and airline in the world has accepted this compromise.

In recent decades, some experts have advocated lowering the maximum cabin altitude from 8,000 feet to 6,000 feet presuming this would enhance cockpit and cabin crew performance and protect the health of the passengers. But is there evidence of this?

Recommendations to lower cabin altitude are based upon the reasonable assumption that a higher ambient pressure and the resulting improved pO_2 would lessen the risk of exacerbation of preexisting illness (particularly cardiopulmonary) and barotrauma. Although there have been a number of articles published in the literature describing inflight medical events, including death, we have been unable to find a correlation of these events with cabin altitudes below about 10,000 feet.

On the other hand, we know that some passengers develop a broad array of nonspecific symptoms during flight including anorexia, nausea, fatigue, headache, and insomnia. We do not know the cause of these symptoms although, for the most part, they are relatively minor and resolve quite rapidly postflight.

Anecdotal evidence seems to suggest that some cabin crew (flight attendants) may similarly experience such transient symptoms which may be aggravated by the nature of their work, which can be quite physically demanding at times. While it would be physiologically plausible for this to happen, there are however, no studies documenting the relationship especially with regard to an “acceptable” cabin altitude where these effects are significantly minimized. It is a known fact that exercise can aggravate symptoms of hypoxia especially in cardiorespiratory compromised individuals. This would happen at any altitude above sea level and would be increasingly severe, the higher the altitude. Again, the question of an “acceptable” altitude remains unanswered. From an occupational health standpoint, workers who are not reasonably fit for the environmental conditions expected within an aircraft cabin, may need to be redeployed.

Regarding performance of cockpit crew, McFarland and Barach did a number of seminal studies some years ago to determine if there is a decrement in cockpit performance with increasing cabin altitude[i] [ii]. It was observed that there is, in some cases, a small but not a significant decrement in vision and psychomotor skills until one reaches a cabin altitude above 10,000 feet, well beyond the prescribed 8,000 feet cabin altitude. Likewise, Denison et al (1961)[iii] reported small decrements in response time during orientation tasks at 8,000 feet relative to 5,000 feet and at both altitudes relative to sea level performance. It is reasonable to assume that there is no added threat to civil flying safety due to performance decrement with an 8,000 feet cabin altitude.

In summary, we could find no evidence that lowering the cabin altitude would prevent significant adverse health effects on reasonably healthy passengers and cabin crew nor significantly enhance performance by cockpit crew. One can only presume that a lower cabin altitude might be more conducive to preventing illness in flight, but this is only conjectural.

Therefore, the Aerospace Medical Association cannot, at this point, recommend a lowered cabin altitude based solely upon health and cockpit performance considerations. The Aerospace Medical Association would encourage more research to be done into this area.

[i] McFarland R. Human Factors in Air Transportation. New York, McGraw-Hill Book Co. Inc. 1953
[ii] Barach AL. McFarland RA, Seitz CP. The effects of oxygen deprivation on complex mental functions. J Av Med – 1937; 8 (4): 197-207.
[iii] Denison DM, Ledwith F. Poulton EC. Complex reaction times at simulated cabin altitudes of 5,000 feet and 8,000 feet. Aerospace Med 1996; 10: 1010-1013.