Soccer at altitude

Hilde Spielvogel

IBBA, La Paz, Bolivia

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For the third time in 11 years, FIFA has vetoed international soccer games at altitudes above 2500 m. The reasons given this time are the same as in 1996 and 2000, namely:

1. To avoid potential risks for the health of the soccer players.
2. Decreased performance and therefore injustice for the lowland team (“fair play”).

The decision of FIFA to prohibit international soccer venues at these altitudes, affects Bolivia, Ecuador, Colombia as well as cities in Chile, Peru, and Mexico. Bolivia with the highest capital in the world (La Paz, 3600 m) and 4 other cities between 2600 and 3900 m altitude, feels especially let down, in as much as FIFA’s president Joseph Blatter was invited to the country in 2000 where he declared to be a son of the mountains, that it is fine to play soccer in La Paz, and that there would be no more vetoes.

La Paz, being a natural laboratory for examining newcomers to high altitude, as well as acclimatized people, sedentary or trained, with its Institute of Altitude Biology, has been the place of numerous studies on acclimatization and de-acclimatization in human beings. In the numerous groups of athletes, soccer players were also included and in 2000 a paper was published (Brutsaert et al., 2000) that compared the performance of acclimatized and non-acclimatized professional soccer players in La Paz.

The results of this paper showed that both teams had a decrease of peak VO2 when examined in La Paz, a fact that is well known and described in the literature. The difference of peak VO2 between high altitude and lowland was somewhat greater in the team from low altitude (20%) than in the altitude acclimatized team (12.6%). Respiratory exchange rate was higher in La Paz in both teams, as well as the ventilatory equivalent for oxygen. Peak lactate concentration and peak heart rate were not significantly different between teams. It was concluded that playing soccer at high altitude is a physiological challenge for both teams, acclimatized and non-acclimatized.

However, soccer is a mixed anaerobic-aerobic sport, and aptitude, strength, as well as talent play a major role in the outcome of the game. Statistics of over 50 years of soccer venues in high altitude cities in Bolivia have shown that the advantage of the home team is not increased by high altitude. Furthermore, it has to be mentioned that neither high altitude pulmonary edema, nor high altitude cerebral edema, nor sudden death occurred during any game at altitude in Bolivia.