

Table 4-1. Acclimatization in workers

Topics	Additional information
Disadvantages of being unacclimatized	<ul style="list-style-type: none"> ▪ Readily show signs of heat stress when exposed to hot environments. ▪ Difficulty replacing all of the water lost in sweat. ▪ Failure to replace the water lost will slow or prevent acclimatization.
Benefits of acclimatization	<ul style="list-style-type: none"> ▪ Increased sweating efficiency (earlier onset of sweating, greater sweat production, and reduced electrolyte loss in sweat). ▪ Stabilization of the circulation. ▪ Work is performed with lower core temperature and heart rate. ▪ Increased skin blood flow at a given core temperature.
Acclimatization plan	<ul style="list-style-type: none"> ▪ Gradually increase exposure time in hot environmental conditions over a period of 7 to 14 days. ▪ For new workers, the schedule should be no more than 20% of the usual duration of work in the hot environment on day 1 and a no more than 20% increase on each additional day. ▪ For workers who have had previous experience with the job, the acclimatization regimen should be no more than 50% of the usual duration of work in the hot environment on day 1, 60% on day 2, 80% on day 3, and 100% on day 4. ▪ The time required for non-physically fit individuals to develop acclimatization is about 50% greater than for the physically fit.
Level of acclimatization	<ul style="list-style-type: none"> ▪ Relative to the initial level of physical fitness and the total heat stress experienced by the individual.
Maintaining acclimatization	<ul style="list-style-type: none"> ▪ Can be maintained for a few days of non-heat exposure. ▪ Absence from work in the heat for a week or more results in a significant loss in the beneficial adaptations leading to an increase likelihood of acute dehydration, illness, or fatigue. ▪ Can be regained in 2 to 3 days upon return to a hot job. ▪ Appears to be better maintained by those who are physically fit. ▪ Seasonal shifts in temperatures may result in difficulties. ▪ Working in hot, humid environments provides adaptive benefits that also apply in hot, desert environments, and vice versa. ▪ Air conditioning will not affect acclimatization.

Adapted from [Moseley 1994; Armstrong and Stoppani 2002; DOD 2003; Casa et al. 2009; ACGIH 2014; OSHA-NIOSH 2011].