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INFLUENCE OF HIGH TEMPERATURES ON THE PERFORMANCE OF ATHLETES ON THE FIELD IN INDIA

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Abstract: India as a nation that lies in the tropical zone. It has around 200 days of solar radiation. Thus barring the northern hilly areas, most of the regions have intense hot climate leading to continuous heat. Humans indulging in sports have to encounter heat while performing different sports events. Athletes in particular, lose a lot of body fluids when the surrounding temperatures shoot above 40oC. How sweating places stress on the muscles to sustain work and on the skin to cool the body to keep the body temperature to an optimum 37 oC needs to be studied. In ideal case the heat removal should exceed the heat produced to keep the body temperature a constant. As the temperature increases the heart has to pump more blood from the core of the body to the skin to extract heat and maintain the fixed body temperature. Long duration events reduce the endurance capacity of an athlete. Proper intake of fluids along with water are advised for better performance and mitigation from any physical injury. The loss of vital nutrients and electrolytes during events in scorching heat in tropical areas need to be compensated by well balanced diet with proper fluids with electrolytes and glucose after every rigorous exercise and followed good rest.

Introduction:

Indian subcontinent has a variety of climatic conditions. In the north we have snow capped mountainous regions with all the year low temperature weather conditions. The great Himalayas shield the nation from cold winds coming from Siberia (Russia) due to the tallest mountains in the Himalayan mountain range. Apart from snow among the regions in the Himalaya range have copious rainfall each year. This makes the climate a conducive one for the humans living there to harness a healthy life. The rivers with full water content throughout the year add a pleasant reason for a good life. The extreme North western regions have a desert type climate. The mighty thar desert region has a different type of climate for sustaining human life. With no rainfall at all the entire region is arid. Human civilization has to struggle with minimum water resources for sustaining their life. The temperatures there often touch 48 to 49oC in the summer season and hardly below 15 oC in the winter season. In the far eastern part of India, eventhough there is no snow in the winters still the mountainous terrains pose a formidable challenge to athletes. The southern region is surrounded by three seas making the central and southern region a humid region with hardly any fluctuation in the temperatures in the summer. People there wear a light type of clothing.

Influence of climatic conditions on Athletes

The life of an athlete need to be taken in terms of the geographical region. A northern India born athlete needs to improve his/her stamina to achieve laurels in the sports games northern India. To make the matters worse is the harsh climate in the winters each year with temperatures close 3 oC or even lower depending upon the overall working conditions. The narrow roads and not so easy access to sports grounds with no running tracks can create a negative impact on athletes who are constantly struggling for getting laurels for their state. Regions in the plains have a different kind of climate. In such regions there are arid and humid areas which can act as a detriment to the well being of humans. Then the athletes have to pump in more energy as per the demands of the events in

which they participate. In the regions surrounded by dry planes like the deccan planes where the amount of rainfall is quite minimum, it is a bane on the athletes for delivering maximum to win a prize in a competition. The regions close to the sea too have a big problem. The high humidity of the climate which make the ejection of sweat a bit fast creates dehydration among the athletes and also a loss of useful electrolytes for the body for sustaining body metabolism. In high heat areas of a tropical country like India, an athlete needs to be acclimatized to hot conditions. Acclimatization to heat expands the blood volume, which supports an increased capacity and precision. The heat generated by the athlete sweats evenly throughout his body thereby regulating the body temperature. Proper steps like fluid balance need to be taken for loss of salts and water from the body which is a necessary fact at the time of running. The athletes need to take fluids before, during and after the performance for avoiding dehydration and maintain a good health. The heart beat which is an indictor for how better is an athlete can tell us the adaptability of the athlete to hot climate. Usually athletes with lower heart beat can exhibit immense stamina for long distance running even in hot climates. People born in hot climates exhibit high stability as athletes thus beating the detrimental effects of heat. During long runs by athletes heat is lost through the evaporation of sweat. During performance the muscles of the body and the skin work hard using a limited blood supply to provide oxygen to the muscle and facilitate heat loss at the surface of the skin, therefore meaning that the body has a reduced ability to decrease and maintain its temperature. So drink breaks consisting vital body fluids that are necessary are to be given to an athlete during training and competitions to maintain a good health of athlete. Say an optimum time like 5 or 8 minutes gap is to be enforced for intake of fluids by the athletes during say, long marathon race to have a good health and well being. The most important fluid that an athlete needs is water. Water without any sugar will be a better option because other carbonated fluids or fluids containing sugars have take a longer time for ejection of sweat and thereby containing the heat within the body and thus decreasing the sporting efficiency of the athlete. During exercise the an athlete should not take 500 ml of water per hour in the installments of 100-200 ml of water. An athlete should consume at least 500 ml of water before taking exercise. The electrolytes lost during performance of the athlete can be regained by taking a proper diet.

Conclusions:

Heat plays a vital role in diminishing the performance of an athlete. Human body as we know is a natural air conditioner. However athletes have to endure more vigorous bouts of exercise and lose a lot of vital body fluids in the form of sweats. Athletes have to pay a heavy prize for the loss of fluids due to sweating. India being a nation of variety of climatic regions has a large variation on the performance of the athletes and sports persons. Right exposure and gradual training from simple to rigorous exercises can make a successful athlete even in hot and humid tropical area of Earth, especially for a nation like India.

References:

1) **Costill, D. L.** (1979). A Scientific Approach to Distance Running. Los Altos, CA: Track and FieldNews.
2) **Costill, D. L., Kammer, W. F., & Fisher, A.** (1970). Fluid ingestion during distance running.
3) Archives of Environmental Health, 21, 520¬525.
4) **Pyke, F. S., & Hahn, A. G.** (1981). Body temperature regulation in summer football. Sports Coach,4(3), 41¬3.
5) **Wilmore, Jack H., &Costill, David L.** (1999). Physiology of sport and exercise (2nd ed).
6) Champaign, Illinois: Human Kinetics.
7) **Harrison, G.A., Tanner, J.M., Pilbeam, D.R., & Baker, P.T.** (1988) Human Biology: Anintroduction to human evolution, variation, growth, and adaptability. (3rd ed). Oxford:
8) Oxford University Press

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