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CLIMATIC CONDITION OF VARIOUS TOURIST PLACE IN HIMALAYAN REGION

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ABSTRACT

The greater Himalayan region "the roof of the world" – contains the most extensive and rugged high altitude areas on Earth, and the largest areas covered by glaciers and permafrost outside the Polar Regions. The water resources from this area drain through ten of the largest rivers in Asia, in the basins of which more than 1.3 billion people find their livelihoods. The region and its water resources play an important role in global atmospheric circulation, biodiversity; rain fed and irrigated agriculture, and hydropower, as well as in the production of commodities exported to markets worldwide. The water resources of this region are currently facing threats from a multitude of driving forces. Global warming is having a severe impact on the amount of snow and ice, which has serious implications for downstream water availability in both short and long term as up to 50% of the average annual flows in the rivers are contributed by snow and glacial melting. The warming in the greater Himalayas has been much greater than the global average: for example, 0.6 degrees Celsius per decade in Nepal, compared with a global average of 0.74 degrees Celsius over the last 100 years. Changes in precipitation are ambiguous with both increasing and decreasing trends in different parts of the region

Key words: Himalayan region, global

INTRODUCTION

Kashmir, Leh, Ladhak, Himachal Pradesh are some of India's most popular place in Himalayan Region from tourism point of view specially in summer season. In this region temperature varies from -3^{o}C to 30^{o}C in different season. Tourists coming from different parts of the globe may not be habituated to such kind of environmental conditions. One has to take care of his health while visiting such places. In order to keep one fit during his/her tour he/she should to observe following points:

- Conduct essential training for cold weather operations before deployment.
- Maintain Peak physical fitness. High level of fitness is beneficial during cold weather operations.
- Reduce periods of inactivity in cold conditions.
- Maintain proper hydration and nutrition during the workday (more of the work is strenuous enough to cause the soldier to sweet).
- Monitor hydration by noting of colour and volume of a soldier's urine Dark yellow urine indicated that fluid consumption should be increased squard leaders should attempt to monitor urine color of equal members.
- Avoid alcohol caffeine and tobacco.

Apart from other things, suitable clothing is one of the essential items to protect a tourist from cold environment. Such clothing must

allow the functions of the body to be maintains and account for its responses as well as protect it from environmental hazards and agents. Clothing provides a microclimate between the body and the external environmental. The human skin responds to the microclimate and the thermoregulatory responses of the body and the heat transfer and vapor permeation properties of the clothing determine the microclimate. It will become more clear by understanding the theory of heat transfer from the body to the skin.

ESSENTIAL PARAMETERS OF FABRICS SUITABLE FOR COLD REGION

In addition to thermal resistance property of a fabric for cold region, the fabric must be breathable to get clothing comfort. Breathable fabric is one of the important components of protective clothing, mainly used in extreme cold climatic conditions. Breath-ability of fabric means the diffusion of body's natural moisture vapor through the outerwear to the outside atmosphere.

FACTORS AFFECTING THERMAL COMFORT IN COLD REGION

Shaker, R.I. *et al.*, has discussed the factors affecting thermal comfort in cold region. The effect of cooling power of wind on exposed flesh is expressed in an equivalent temperature. Thus the protection of an individual in a cold environment would depends on following main factors:

- Metabolic Heat
- Wind Chill
- Thermal Insulation
- Moisture Vapour Transmission.

Metabolic Heat:

The heat output due to metabolism depends on the body parameters as well as the activity involved. The heat output would be lowest at rest &maximum during hard work. For a normal youth 18-30 years weighing 70 kg. The heat output would be of the order of 60 kcal/h during rest or sleeping 100 kcal/h during guard duty, 250 kcal/h during patrolling and 425 kcal/h during hard work. However, the garment system should be capable of providing protection at the lowest level of activity i.e. sleeping or rest. These points should be kept in view while designing protective clothing.

Wind Chill:

Wind Chill depends on the temperature as well as velocity of the wind. Wind chill factor can be derived from simple passel formula:

$$Ko = (\sqrt{V} \times 100 + 10.45 - V)(33 - TA)$$

Where, Ko = Cooling power of the atmosphere in $Kcal/m^2$ /hr.

V = Wind velocity in m/s

TA = Air temperature in ºC.

Where, air temperature is measure of the degree of hotness or coldness of the air. And wind Velocity is the speed of air movement measured in miles per hour or meters per second. In the cold climate consideration of wind chill effect is very important because 80% of heat losses are due to wind chill effect. 33ºC is taken as the skin temperature under calm conditions. The significance of wind chill factor may be understood by reviewing its effect on the freezing time of exposed flesh. At a wind chill factor of 1000, an individual would feel very cold & at 1200, bitterly cold. When the wind chill factor is 1400, the exposed flesh would freeze in 20 minutes, at wind chill factor of 1800 the exposed flesh

would freeze in 10 minutes & when the wind chill factor is 2400, exposed flesh freezes in 1 min. only.

Thermal Insulation:

The protection against cold is dependent on thermal resistance or thermal insulation of the garment or clothing. The thermal insulation is the ratio of the temperature difference between the two faces of the fabrics to the rate of heat flow. Generally, we see decrease in insulation for wider spaces that may be attributed to development of more convection currents when void becomes wider.

Air permeability:

The interlacement of yarns in a fabric structure is such that a fabric consists of large volume of air space. These air spaces influence a number of important fabric properties such as warmth, protection against wind & rain. In general a wearer would be more comfortable with a fabric of high air permeability then with a fabric of less air permeability. However, the open structure would enhance the effect of wind chill. The thermal resistance obtained in still air with a fabric of a particular structure would be ineffective even in cold breeze if the air permeability is high.

Moisture Vapor Transmission:

The transmission of water through a fabric is a very critical parameter from comfort point of view. In winter it is possible that water vapor produced by perspiration at the skin can be condensed to the liquid which may subsequently freeze to ice as the water molecules moves towards the cold air at the external surface. If a fabric cannot permit sufficiently rapid disposal of water to occur, perspiration related discomfort would be felt. A serious drain of body heat may also be realized because of the diminished thermal resistance of the wet cloth and the tendency of re evaporation of the water to take place. The movement of water can be increased by either increasing water vapor permeability or by enhancing the ability of the fabric to transport liquid water to the surface. The ability of water vapor transmission can be increased by increasing pore size whereas liquid transport can be increased by reducing pore size to increase capillary action.

SIGNIFICANCE OF THE STUDY

As per the brief review of literature it was known that several health problem may is cold climate of occur Himalyan region. The human endurance in cold climate relies on various factors that influence the protection of an individual in a cold environment. Duration of exposure to such weather condition makes Indian tourist stand apart from rest of the world. But at the same time extreme conditions of the region highlights the need to design & develop suitable clothing. In most of the cases, clothing in cold region is of complex nature & needs a perfect balance between the functional, comfort & physiological requirement. Presently in our country no such multilayer protective assembly has been developed & conventionally used clothing.

OBJECTIVES

- Identification of fiber/filament/material suitable to produce thermal resistance fabric.
- Development of suitable yarn from the above fiber.
- Preparation of suitable fabric from the developed technical yarn, which will have desired thermal resistant.
- Preparation of the multilayer assembly.
- Evaluation of the fabric multilayer assembly with respect to its thermal resistant characteristics.

LIMITATIONS OF THE STUDY

- Samples have been evaluated in the normal atmospheric conditions.
- Only six multilayer combinations have been studied.
- Developed multilayer assembly shall be evaluated in the simulating condition.

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