ORIGINAL RESEARCH

70. Modulatory Role of Pre-orthostatic Cold-Water Ingestions on the Electroencephalogram

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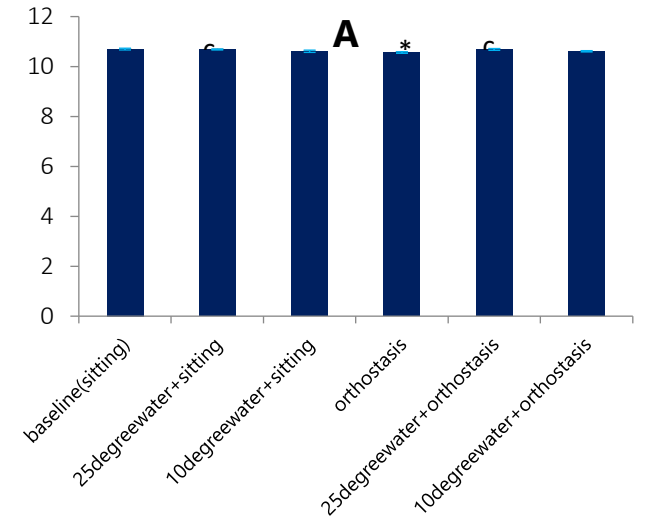
Background: Literature is replete with the adverse outcomes of the cold impacts of climate change. The aim of the study was to investigate the effect of pre-orthostatic cold water ingestions on the electroencephalogram in male individuals.

Methods: 35 apparently healthy young males averaging 19.5years satisfied the inclusion criteria and were selected for the study. Participants ingested 500militers of portable commercial water at 25^0c and 10^0c five minutes prior to sitting or orthostasis. Orthostasis lasted for minutes. Electroencephalogram (EEG) was recorded using PowerLab 26T with eye opened. On assumption of erect position, EEG recording was started and continued for 20 minutes during which the standing lasted.

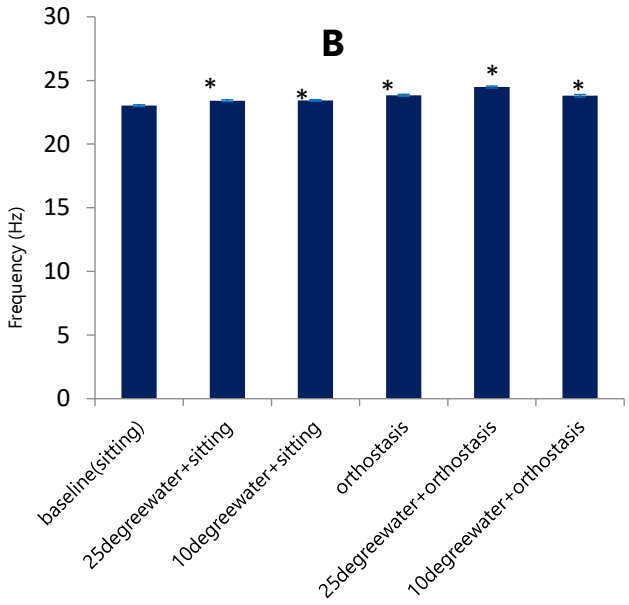
Results: Ingestion of 25^0c or 10^0c water prior to orthostasis has no significant effect on alpha wave frequency when compared to baseline. Beta wave frequency and alpha/beta ratio were significantly higher and lower in participants who ingested 25^0c prior to orthostasis when compared to those who ingested 25^0c prior to sitting respectively. Beta wave frequency and alpha/beta ratio also increased and decreased respectively in participants who ingested 10^0c prior to orthostasis when compared to those who ingested 10^0c prior to sitting. Ingestion of 25^0c prior to orthostasis caused higher beta wave frequency and lower alpha/beta ratio when compared to participants who ingested 10^0c prior to orthostasis.

Conclusion: The findings of the study demonstrated that ingestion of 25^0c water prior to orthostasis was associated with relatively greater cortical activation.

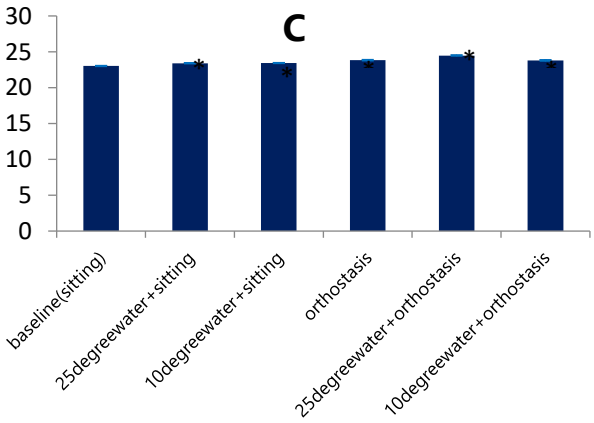
Figure 1: Effect of Pre-Orthostasis Cold Water Exposure on Alpha Wave Frequency (A, B, C)



Legend: Showed that orthostasis significantly decreased alpha wave frequency when compared to baseline. Ingestion of 250c water prior to sitting posture significantly reduced alpha wave frequency when compared to orthostasis. Ingestion of 250c water prior to orthostasis significantly increased alpha wave frequency when compared to orthostasis.



Legend: Showed that ingestion of 250c water prior to sitting posture, ingestion of 100c water prior to sitting posture and ingestion of 250c water prior to orthostasis significantly decreased alpha wave amplitude when compared to baseline respectively.



Legend: Represents significant difference from baseline (sitting). a represents significant difference between 25degreewater+sitting and 25degreewater+orthostasis. b represents significant difference between 10degreewater+sitting and 10degreewater+orthostasis. c represents significant difference from orthostasis. d represents significant difference between 25degreewater+orthostasis and 10degreewater+orthostasis.

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