

## Cold Pressor Test in Borderline Hypertensive University Students

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### Abstract

Hypertension is a major global non communicable disease with an estimation of one quarter of adults suffering from it worldwide. The number is predicted to increase by about 60% in 2025. Hyperactive sympathetic reaction is an important factor for development of hypertension in young individuals. The stress induced increase in blood pressure recovers within very short period of time (5 minutes) and those with exaggerated stress induced cardiovascular response at young age have a high risk of BP elevation in future. The study aims to determine the cardiovascular reactivity in response to cold and also to correlate its relation with other factors such as smoking, family history and physical activity. Study was conducted in 130 Pharmacy students of age group 21 to 24 in the Department of Pharmacy, Kathmandu University from July to November, 2015. Out of 130 volunteers 34 were found to be prehypertensive and equal number of normotensive were recruited randomly to perform the cold pressor test. Data was analyzed by Student's t-test using Microsoft Excel 2007. Systolic and diastolic blood pressure increased significantly after cold pressor test in both normal and prehypertensive group. Maximum change in both SBP and DBP was observed after 2.5 minutes of removal of hand from cold water. Though sharp drop was observed in both SBP and DBP at the end of 2.5 minute in both groups of individuals, the recovery in case of prehypertensive individual was not as sharper. In the present study most of the diastolic hyperreactors were male. An underlying history of familial hypertension may contribute more towards diastolic hyperreactivity. Significant rise in DBP was observed in prehypertensive smoking males. Also the difference was significant in recovery of DBP between smoker and non smoker prehypertensive group. In consideration of physical activity and family history of hypertension among normal and prehypertensive individuals, we found no major differences. This study suggests that prolonged elevation in blood pressure in response to stress in young individual can be used as marker of development of hypertension in future. Adopting a healthier lifestyle can help to delay the development of hypertension in later life.

**Keywords:** Hypertension, Cold Pressor Test, Hyperreactors