

## Laughter and Immunity

### The effect of mirthful laughter on stress and natural killer cell activity.

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**CONTEXT:** A recent survey of rural Midwestern cancer patients revealed that humor was one of the most frequently used complementary therapies. Psychoneuroimmunology research suggests that, in addition to its established psychological benefits, humor may have physiological effects on immune functioning. **OBJECTIVE:** To determine the effect of laughter on self-reported stress and natural killer cell activity. **DESIGN:** Randomized, pre-post test with comparison group. **SETTING:** Indiana State University Sycamore Nursing Center, which is a nurse-managed community health clinic in a mid-sized, Midwestern city. **PARTICIPANTS:** 33 healthy adult women. **INTERVENTION:** Experimental subjects viewed a humorous video while subjects in the distraction control group viewed a tourism video. **MAIN OUTCOME MEASURES:** Self-reported stress and arousal (Stress Arousal Check List), mirthful laughter (Humor Response Scale), and immune function (chromium release natural killer [NK] cell cytotoxicity assay). **RESULTS:** Stress decreased for subjects in the humor group, compared with those in the distraction group ( $U_{32} = 215.5$ ;  $P = .004$ ). Amount of mirthful laughter correlated with postintervention stress measures for persons in the humor group ( $r_{16} = -.655$ ;  $P = .004$ ). Subjects who scored greater than 25 on the humor response scale had increased immune function postintervention ( $t_{16} = 2.52$   $P = .037$ ) and compared with the remaining participants ( $t_{32} = 32.1$ ;  $P = .04$ ). Humor response scale scores correlated with changes in NK cell activity ( $r_{16} = .744$ ;  $P = .001$ ). **CONCLUSION:** Laughter may reduce stress and improve NK cell activity. As low NK cell activity is linked to decreased disease resistance and increased morbidity in persons with cancer and HIV disease, laughter may be a useful cognitive-behavioral intervention.

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