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| In beginning our research on stress, we found that "�taking frequent effective exercise is probably one of the best physical stress-reduction techniques available. Exercise not only improves your health and reduces stress caused by unfitness, it also relaxes tense muscles and helps you to sleep." (Earthnet) It improves blood flow to your brain, bringing additional sugars and oxygen, which may be needed when you are thinking intensely. When you think hard, the neurons of your brain are forced to function more effectively in less time. As they do this they build up toxic waste products that cause foggy thinking in the short term, and can damage the brain in the long term. During exercise, the flow of blood to the brain is increased, moving these waste products faster. Exercise also improves blood flow so that even when you are not physically exerting yourself, waste is eliminated more efficiently. Your body temperature rises, adrenal activity is increased, and your nuerotransmitters function more efficiently. But perhaps most importantly, exercise releases chemicals into the blood stream called endorphins. Endorphins (literally, morphine within) were a long time in the discovering. It had long been suspected in the scientific community that there were specific binding sites in the brain for opiates. Once these were found in the 1970s, it raised the question of "Why would God have made opiate receptors unless he had also made an endogenous morphine-like substance?" (Goldstein, Lowney & Pal, 1971) Later, in 1975, two doctors in Scotland discovered endorphins. It was found that they interacted with specific opiate receptors in the brain to reduce the sensation of pain. Beta-endorphins, found mainly in the pituitary gland, and enkephalins and dynorphins, circulated through the nervous system, are the three main types of endorphins. "Prolonged, continuous exercise contributes to an increased production and release of endorphins, resulting in a sense of euphoria that has been popularly labeled runner's high." (Britannica, 2001)    Some say exercise only takes one's mind off stress, and therein lie the benefits, but there is mounting evidence that the physical and emotional condition is impacted for the better during exercise through the release of endorphins. A study done by Dr. Landers and Boutcher Ph.D. (Diamond, p. 264) considered the effect of vigorous exercise and then the effects of a quiet reading session on the same individuals. They found that almost without fail the subjects felt much less anxiety after running, whereas their anxiety decreased only slightly after reading. Their results join in the many others that point to the conclusion that exercise is not only physically but also emotionally healthy for the participants.    When approaching exercise as a relief mechanism for stress however, we must look at the way in which an individual exercises. We propose that the ability to handle stress is an acquired characteristic, gained through exercise and specifically competitive sports where high stress environments are present. For the sake of the experiment, sports that are played for our highschool and will be deemed high physical stress sports are: basketball, football, baseball, softball, lacrosse, tennis, track and field, soccer, swimming, and diving. Each of these has the crucial element of competition. Non competitive exercisers will be deemed anyone who strenuously exercises 3 or more times a week, with strenuously defined as 20 minutes of exercise in which the participant reaches peak heart rate.    ([Intro1](http://docs.google.com/introduction.html))([Intro2](http://docs.google.com/intro2.html))([Intro3](http://docs.google.com/intro3.html))([Intro4](http://docs.google.com/intro4.html))[(Intro5](http://docs.google.com/intro5.html))  [[Home](http://docs.google.com/home.html)][[Introduction](http://docs.google.com/introduction.html)][[Hypothesis](http://docs.google.com/hypothesis.html)][[Procedure](http://docs.google.com/procedure.html)][[Data](http://docs.google.com/data.html)][[Conclusions](http://docs.google.com/conclusions.html)][[Bilio/Links](http://docs.google.com/biblio.html)]  [[2002 Projects](http://docs.google.com/AP2002/index.html)][[2001 Projects](http://docs.google.com/index.html)][[2000 Projects](http://docs.google.com/AP2000/index.html)][[1999 Projects](http://docs.google.com/AP99/index.html)][[1998 Projects](http://docs.google.com/AP98/index.html)] |