CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J1016

Project Title
Is Temporomandibular Joint Health Related to Posture?

Abstract

Objectives/Goals
Millions of people suffer from temporomandibular joint (TMJ) disorder. Symptoms include pain and clicking in the joint itself as well as shoulder, neck and back pain. The objective of this project is to determine if TMJ health is related to posture. It is hypothesized that improvement in temporomandibular joint dysfunction, as shown by an increase in retro-discal space on tomograms (x-rays), will be related to a decrease in forward head posture.

Methods/Materials
Charts for 51 patients (N=10 men and N=41 women) treated for TMJ disorder were reviewed. The area within the TMJ called the retro-discal space was measured in pre- and post-treatment tomograms; greater space indicates better TMJ health. The slant between the shoulder and ear hole was measured in pre- and post-treatment photographs as an indicator of forward head posture; less slant indicates better posture.

Results
Subjects ranged from 13-74 years (average=43.1). Comparisons with pre-treatment measures showed that after treatment, retro-discal space was increased by an average of 1.67 mm on the left side and 1.92 mm on the right. These differences were statistically significant($t = -10.11$, $p<0.0001$ on the left; $t = -9.62$, $p<0.0001$ on the right). After treatment, the amount of slant between the shoulder and ear hole decreased by 4.43 inches on average which was also significant ($t = 13.08$, $p<0.0001$).

Conclusions/Discussion
TMJ health is related to posture. Retro-discal space was greater after treatment, indicating improved TMJ health. The slant between the shoulder and ear decreased after treatment, indicating improved posture. My hypothesis that improvement in TMJ dysfunction is related to a decrease in forward head posture was confirmed. The results of this study suggest that treatment for TMJ disorders can have beneficial effects on other aspects of health such as posture.

Summary Statement
This project examines the relation of temporomandibular joint (TMJ) dysfunction with forward head posture.

Help Received
Learned about TMJ, measurement of retro-discal space and posture, and used patient charts from Dr. Steven Olmos; Learned statistics from Mother.