

The Long-Term Effects of Daily Smartphone Usage on Cervical Spine Kinematics

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INTRODUCTION: It is evident that in today's technologically run world, the majority of individuals own and interact with a smartphone throughout their daily lives. This constant interaction poses significant risks to a person's musculoskeletal system, specifically that of the cervical spine. It is important to recognize the long-term effects our smartphones may one day have on us.

PURPOSE: The purpose of this study was to determine the effects of smartphone addiction on cervical spine kinematics of young adults.

METHODS: Thirty-one healthy individuals aged 18-25 participated in this study. Goniometric range of motion (ROM) was obtained for flexion, extension, right and left rotation, and right and left lateral flexion. Evaluation of electromyography (EMG) activity occurred in right and left upper and lower trapezius, and sternocleidomastoid muscles while participants played Jetpack Joyride on their smartphone. A smartphone addiction scale was also given to participants to determine whether they fell into the addicted or non-addicted category. Correlation coefficients and independent sample *t*-tests were used to analyze the data using SPSS with the alpha level set at 0.05.

RESULTS: Of the 31 participants, 22 were deemed non-addicted and 9 were deemed addicted based on their survey scores. All ROM averages were less for the addicted group but none were statistically significant. The only statistically significant finding regarding EMG analysis was for the left lower trapezius. This muscle demonstrated greater fatigue in the non-addicted group. No correlations were significant.

CONCLUSION: The results indicate there is not a statistically significant difference in terms of cervical spine ROM between individuals who fall into the smartphone addicted category when compared to those who were non-addicted. Also, the fact that the left lower trapezius fatigued more compared to the non-addicted group could indicate that this muscle has built up endurance in the individual considered addicted. Further research may be needed to determine the manner in which smartphones affect our cervical spine kinematics.