

Developing a Comprehensive Model for the Prevention of Tension Neck Syndrome: A Focus on Musculoskeletal Disorder Prevention Strategies

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Abstract : This paper provides initial results on the efficacy of the designed ergonomic-oriented neck support to mitigate and alleviate tension neck syndrome musculoskeletal disorder. This is done using both simulations and measurements. Tension Neck Syndrome Musculoskeletal Disorder (TNS MSD) causes discomfort in the muscles around the neck and shoulder. TNS MSD is one of the leading causes of early retirement. This research focuses on the design of an adaptive neck supporter by integrating a soft actuator massager to help deliver a soothing massage. The massager and adaptive neck supporter prototype were validated by finite element analysis prior to fabrication to envisage the feasibility of the design concept. Then a prototype for the massager was fabricated and tested for concept validation. Future work will be focused on fabricating the full-scale prototype and upgrading and optimizing the design concept for the adaptive neck supporter.

Keywords : adaptive neck supporter, tension neck syndrome, musculoskeletal disorder, soft actuator massager, soft robotics

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