

Analysis for prevalence of carpal tunnel syndrome in shocker manufacturing workers

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ABSTRACT

Carpal tunnel syndrome (CTS) is the most commonly reported work-related musculoskeletal disorder of the upper extremity. In this communication, a comparison of CTS and associated risk factors amongst traditional and semi-ergonomic shocker manufacturing assembly line workers in the actual industrial environment has been studied through questionnaire and physical tests. Fisher's exact test and Surface electromyography (sEMG) signal values have been used for statistical data analysis. Symptoms present are numbness (in 80 % of traditional and in 16.66 % of semi-ergonomic), tingling (in 50 % of traditional and in 8.33 % of semi-ergonomic), and difficulty in grasping (in 80 % of traditional and 20 % of semi-ergonomic). Tinel's and Phalen's sign also show an almost similar trend. The results reflect that the traditional shocker manufacturing workers have more CTS symptoms occurrence than the semi-ergonomic shocker manufacturing workers. The sEMG signal analysis result reveals that the lesser muscle activity values (EMG-RMS values) indicate the contribution of CTS symptom in shocker assembly line workers. It is found that there is a significant difference in EMG-RMS values of CTS symptoms and control subjects in traditional and semi-ergonomic shocker manufacturing industries. It is observed that if a subject is affected with CTS symptoms, then the sEMG signal value is 0.01223 mV in case of traditional and 0.02625 mV in case of semi-ergonomic shocker assembly, and for control subjects sEMG signal value is 0.15614 mV in traditional and 0.17563 mV in case of semi-ergonomic shocker assembly.

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Analiza razširjenosti sindroma karpalnega kanala pri delavcih v proizvodnji

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POVZETEK

Sindrom karpalnega kanala (angl. CTS) je najpogostejša z delom povezana mišičnoskeletna motnja zgornjih okončin. V prispevku je prikazana primerjava pogostosti CST in povezanih faktorjev tveganja med običajnimi proizvodnimi delavci in proizvodnimi delavci na montažni liniji, ki so imeli določeno raven ergonomsko urejenega delovnega mesta. Industrijska delovna okolja so bila proučena s pomočjo anketnih vprašalnikov in fizičnimi testi. Za statistično analizo podatkov sta bila uporabljena Fischerjev natančni test in površinska elektromiografija (angl. sEMG). Rezultati so bili naslednji: odrevenelost se je pojavila pri 80 % običajnih delavcev in 16.66 % delavcev z ergonomskimi prilagoditvami delovnega mesta, ščemenje je bilo pri prvih navzoče pri 50 %, pri drugih pa pri 8.33 %, težave pri prijemanju pa pri 80 % iz prve skupine in 20 % iz druge. Tinelov in Phalenov znak je pokazal podoben trend. Rezultati so pokazali, da imajo običajni proizvodni delavci več CTS simptomov kot pa delavci z nekaterimi ergonomskimi prilagoditvami delovnega mesta. Analiza sEMG signalov je razkrila, da manjša mišična aktivnost (EMG-RMS vrednosti) prispeva k CTS simptomom pri običajnih delavcih v proizvodnji. Ugotovljena je bila signifikantna razlika v EMG-RMS vrednostih CTS simptomov in kontrolnih posameznikov v prvi in drugi skupini delavcev. Ugotovljeno je bilo, da je pri posameznikih, ki imajo CS simptome vrednost signala 0.01223 mV, v primeru druge skupine pa 0.02625 mV, za kontrolne posameznike pa je bila vrednost signala 0.15614 mV in 0.17563 mVs.

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PODATKI O ČLANKU

Ključne besede:

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