

## **Predicting Treatment Outcome of Spinal Musculoskeletal Pain Using Artificial Neural Networks: A Pilot Study.pdf**

Musculoskeletal pain is a heterogeneous condition with multiple risk factors, primary sources that can affect treatment and rehabilitation outcome. In this paper, we developed a prediction model for therapeutic subgrouping of musculoskeletal pain using ANN. A dataset of 27 patients with neck/shoulder pain was used. Patients received a single injection (0.2 ml) of 0.5% lidocaine at the trigger points. ANN model was used for predicting treatment outcome based on influential pre-treatment variables as inputs. Leave one out cross validation (LOOCV) method was used for validation. The strength of each predicting variable was tested using multilayer feed forward neural network with back propagation (MFFNN) and LOOCV. Then, the MFFNN prediction model was developed and designed based on the selected variables. Post-treatment endpoint follow-up (fourth week VAS) was selected as a good indicator of treatment outcome. Serum vitamin D and ferritin were relatively better predictors of treatment response in the current patient group. ANN obtained 85% prediction accuracy.