***An Evaluation of Peak Emergency Braking Abilities in the Healthy Population***

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***Background:*** *“When can I return to driving?”* is commonly asked by rehabilitating patients in orthopaedic clinics. Without definitive guidelines, patients may wait longer to drive, causing adverse social and economic effects. Determining peak emergency braking abilities in a healthy cohort may enable a better understanding of patients return to normal braking fitness

***Methods:*** Healthy volunteers (n=100) each performed 10 emergency stops on a driving simulator, from which we measured Peak Brake Pedal Force (peak BPF), Brake Reaction Time (BRT), and Rate of Application of Force (ROAF). Multivariate regression analysis was performed on the independent variables: Gender, Age, Height and Weight, to determine their relationship with braking performance.

***Results:***  Measurement of peak braking abilities has generally been inconsistent and dealt primarily with BRT, not BPF or ROAF. The mean peak BPF= 323.8±101.2 N, mean BRT 535±120 ms (milliseconds), mean ROAF= 0.75±0.28 N/ms. Of significance, age (negatively) and height (positively) affected braking ability (p<0.05).

***Conclusions:*** Whilst emergency braking should not be used to judge fitness to drive, knowledge of the braking abilities of the healthy population can help to determine when a rehabilitating patient has regained an adequate level of health.