

ABSTRACT

Commonly, the motorcycle riders are in an astride position during the trip. They placed the legs on a pedal by the same token of passengers. It will produce the inner-thigh pressure which leads to the transient paresthesia in the form of an insufficient blood supply. This position is caused by hanged legs where the leg cannot reach to the pedal. Oftentimes the syndrome is experienced by children of 3-4 years old. The objective of this study is to investigate the health impact on the upper legs based on muscle contraction. The empirical study is conducted to record the signal of muscle contraction by attaching some sensors on Semimembranosus muscle area. 12 children have participated in this study. Their age is 3-4 years old. The experiment was conducted for one hour with two conditions of motorcycle that is off-engine and on-engine. The off-engine condition is motorcycle not having vibration and on-engine is a motorcycle engine producing vibration which transferring it to the body. The children were instructed to get a ride on a motorcycle and identified the muscle contractions on the thigh by using electromyography. Blood pressure was also measured to identify a state of the blood flow. Statistical analysis is done to test the hypothesis by using T Test and the result is 0,014 and 0,000018 in on and off engine respectively and 0,028 and 0,000012 in female and male respondents respectively. The result of this study found that the contraction of semimembranosus muscle has difference between male and female with average RMS value are 0,57 mV and 0,17 mV respectively in on-engine condition and 0,1 mV and 0,05 mV respectively in off-engine condition. The blood pressure value of Systolic and diastolic have average value of 88,33/65 mmHg before experiment, 76,67/63,33 mmHg after experiment for male and 95/73,33 mmHg before the experiment, 78,33/66,67mmHg after the experiment for female. Those values showed that the prolonged sitting in on-engine condition is having higher muscle fatigue than off-engine for both, male and female.

Keywords: *Paresthesia, Blood Pressure, Prolonged Sitting; Surface Electromyography; Pedal*