Correlation Between Q-Angle, Arch Index, and Weight Distribution Dependent on Supination and Pronation While Walking

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Supination and pronation are deviations from normal during walking in regard to when the heel hits the ground. Arch index is a measurement taken from the dimensions of a footprint that is used to determine the height of the arch of a foot. Weight Distribution is the difference in pressure put on each foot while standing comfortably. The Q-Angle is a line connecting the hip bone to the center of the knee, and the knee to the top of the shin. **PURPOSE:** The purpose of this study was to determine if there was relationship between the subject's static Q-angle, arch index, weight distribution and pronation and supination while walking. **METHODS:** Twenty-four female DeSales University students (19.8 ± 0.75 yrs) were recruited for this study. Footprints were obtained from the dominate foot of each subject and were used to measure the arch index. The subjects were recorded while walking on a treadmill to determine supination and pronation of the foot. Weight distribution was taken by having the subjects stand on two separate, identical scales. The subjects were photographed at waist height to measure Q-Angle. A Pearson Product Moment Correlation was used to determine if there was a relationship between the four variables. **RESULTS:** The Pearson Product Moment Correlation identified that there is significant association between Static Q-Angle and Static Pronation/Supination ($r=0.422$, $p<0.05$). The Pearson Product Moment Correlation identified that there is no significant association between Walking Q-Angle and Static Pronation/Supination ($r= 0.196$, $p>0.05$), between Static Q-Angle and Arch Index ($r= -0.207$, $p>0.05$), between Walking Q-Angle and Arch Index ($r= -0.046$, $p>0.05$), between Arch Index and Static Pronation/Supination ($r= -0.220$, $p>0.05$), between Weight Distribution and Static Pronation/Supination ($r= -0.151$, $p>0.05$), between Weight Distribution and Arch Index ($r= -0.290$, $p>0.05$) and between weight distribution and arch index ($r = 0.378$, $p > 0.05$). **CONCLUSION**: There was one relationship found between the static Q-Angle and Static Pronation/Supination indicating that one may affect the other. Further research may be required to determine if there are other relationships between the variables.