

## Friction and Wear Characteristics of Diamond Nanoparticles Mixed with Copper Oxide in Poly Alpha Olefin

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**Abstract :** Plyometric training is a form of specialised strength training that uses fast muscular contractions to improve power and speed in sports conditioning by coaches and athletes. Despite its useful role in sports conditioning programme, the information about plyometric training on the athletes cardiovascular health especially Electrocardiogram (ECG) has not been established in the literature. The purpose of the study was to determine the effects of lower and upper body plyometric training on ECG of athletes. The study was guided by three null hypotheses. Quasi-experimental research design was adopted for the study. Seventy-two university male athletes constituted the population of the study. Thirty male athletes aged 18 to 24 years volunteered to participate in the study, but only twenty-three completed the study. The volunteered athletes were apparently healthy, physically active and free of any lower and upper extremity bone injuries for past one year and they had no medical or orthopedic injuries that may affect their participation in the study. Ten subjects were purposively assigned to one of the three groups: lower body plyometric training (LBPT), upper body plyometric training (UBPT), and control (C). Training consisted of six plyometric exercises: lower (ankle hops, squat jumps, tuck jumps) and upper body plyometric training (push-ups, medicine ball-chest throws and side throws) with moderate intensity. The general data were collated and analysed using Statistical Package for Social Science (SPSS version 22.0). The research questions were answered using mean and standard deviation, while paired samples t-test was also used to test for the hypotheses. The results revealed that athletes who were trained using LBPT had reduced ECG parameters better than those in the control group. The results also revealed that athletes who were trained using both LBPT and UBPT indicated lack of significant differences following ten weeks plyometric training than those in the control group in the ECG parameters except in Q wave, R wave and S wave (QRS) complex. Based on the findings of the study, it was recommended among others that coaches should include both LBPT and UBPT as part of athletes' overall training programme from primary to tertiary institution to optimise performance as well as reduce the risk of cardiovascular diseases and promotes good healthy lifestyle.

**Keywords :** boundary lubrication, copper oxide, friction, nano diamond

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