This study investigated the effects of different arm actions on cardio-respiratory parameters and stride patterns during the steady phase of long distance running. Mean values of working heart rate (WHR), recovery heart rate (RHR), percentage of maximum oxygen consumption (% VOZ max), ventilation rate (VR), and rating of perceived exertion (RPE) were used to estimate physiological demands and the energy cost of running with different arm actions. This helped to evaluate and compare their effects on running economy (RE). Ten elite Kenyan endurance athletes of both sexes were selected through purposive sampling procedures and tested in ten sub-maximal treadmill trial runs, each trial performed with different arm action for 15 minutes at a speed corresponding to individual's 80% running effort. Their working and recovery heart rates were monitored (using Polar heart rate monitor), as well as the rating of perceived exertion (using Borg Scale of perceived exertion), ventilation rate (VR) and stride rate (SR) during each trial and the values recorded after every five minutes. The Cooper test was used to estimate participants' VOz max. Regression equations were used to estimate percentage of maximum oxygen consumption and kilocalories expended (Kcl) from working heart rate values. ANOVA with Repeated Measures was used to analyze the data, using the SPSS software. Significant difference was observed in WHR, % VOz max, Kcl, RPE, and SR at p < .05. Intraclass Correlation Coefficient (R) analysis of individuals' trial-to-trial test values showed high reliability for all the variables measurements and procedures (WHR; 98, RHR; .83, RPE; .83, VR, .99, SR; .90, % VOZ max; .98, Kcl; .97). Medium effect size was observed; Omega Squared (co²) = .20. The study concluded that arm action consisting of about ±20 degrees oscillation of the hands around 90 degrees angle at the elbow is more economical than running with arms held at 90 degrees angle at the elbows (one recommended by most biomechanics authors), and that different arm actions have different effects on the various components of running mechanics. The study recommended that arm action consisting of about 30 degrees elbow angle range of oscillation -arm action involving oscillation of elbow angles from 70 degrees (on foreswing) 100 degrees (on backswing), be adopted by distant runners for optimum performance.