The game of basketball requires a mastery of several skills to play and perform well in a competition. The aim of this study was to establish the differences in the selected skill related components of physical fitness in relation to playing positions amongst male basketball players during the Kenya Basketball Federation (KBF) 2005 Premier League season. The study assessed agility, leg explosive power and aerobic capacity in relation to playing positions. The league comprised 10 teams of 12 registered players each, thus the target population was 120 players. The sample included 48 male basketball players from 4 teams which is 40% of the total population. A stratified random sampling procedure was used to select the teams used in the study. Strathmore University "Blades" male basketball players were used for the pilot study. An ex-post facto research design was used in this study. The data obtained through this study was subjected to statistical analysis using Statistical Package of Social Sciences (S. P. S. S.). Descriptive statistics of mean and standard deviation were used in the analysis of the data. One-way analysis of variance (ANOVA) was used to test the research hypotheses. The data collected were then presented using tables. Four hypotheses were tested and the results showed that there were no significant differences in agility amongst the guards who were 23 (48% of the total population), forwards 17 (35%) and centers 8 (17%) at p< 0.05. There were no significant differences in leg explosive power amongst the guards, forwards and centers at p< 0.05. There were also no significant difference in aerobic capacity amongst guards, forwards and centers at p< 0.05. The null hypotheses proposed were therefore not rejected. The players did not show significant differences in the scores of the components tested and this was attributed to the lack of specificity during training which takes place in total contrary to the specific requirements of the positional roles. The study recommended further research to establish the training regimens followed by various teams during the off season and in the competitive season and especially as regards the requirements of the positional roles not only in basketball but also in other sports. The study also recommended that Kenya Basketball Federation and the clubs initiate fitness testing programmes so as to establish norms for the Kenyan basketball players. This would help to form a basis for developing the selection criteria and guidelines for policy formulation.