Statistical Modelling for Injuries among the Soccer Players in Jaffna

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Abstract: Many studies have reported the frequency and types of injuries in soccer players. However, a few have assessed the relationship of playing position, climate, psychological effects and infra structure facilities with injury. The purpose of the study was to develop a statistical model for injuries among the soccer players in Jaffna. The observations on the soccer injury-related variables, age, Body Mass Index (BMI), playing position, years of experience, training method, equipment and ground facilities, climate and psychological effect were collected from a simple random sample of 125 soccer players from Jaffna. These nine variables were grouped into 3 factors using the factor analysis techniques. The first factor (TIF) consists of training method and infra structure facilities; the second factor (AE) consists of age and years of experience and the third factor (BMP) consists of BMI and playing position. It is interesting to note that the three variables in the first factor are common for a soccer team and the variables in other two factors are associated with individual players. Significant associations exist between injuries and standardized BMI groups as well as playing positions. The odds of getting injury was significantly increased from back to forward direction in the soccer field. Logistic regression analysis was used to fit a model for soccer injury for a team by considering the factor TIF and another logistic regression model was fitted for soccer injury for an individual player considering other two factors AE and BMP. Further, a sample maximum likelihood discriminant function (SMLDF) was developed to classify a soccer player as injured or not. Using the SMLDF and based on an individual soccer player's observations on the above nine variables, we will be able to advise him about the risk of getting injury in future.

Keywords: Discriminant Analysis, Factor Analysis, Logistic Regression, Odds Ratio, Principal Component Analysis