

CHAPTER THREE:
METHODOLOGY

SUBJECTS

A retrospective analysis of information collected on all female athletes diagnosed with a stress fracture from 1994-1998 was conducted in this study. The age range of the subjects was 17-23 years, and they were all participants of one of the eight varsity sports (basketball, lacrosse, track/cross country, volleyball, swimming, tennis, soccer and softball). Subjects were given an ID number to ensure subject anonymity and confidentiality. This study had the approval from the Human Ethics Committee of Virginia Polytechnic Institute and State University.

DATA COLLECTION

All injured collegiate athletes at Virginia Polytechnic and State University were evaluated and treated by the athletic department training staff and physicians. Injury data for all the athletes was recorded and stored in a computer database. Data for all stress fractures diagnosed between the years 1994-1998 was collected by reviewing the charts of the injured athletes. Stress fractures were diagnosed based on clinical evaluation and a positive technetium 99m bone scan or radiographic results.

VARIABLES

Injury Type

The type of injury sustained by each of the athletes was recorded. Multiple injuries to one athlete were treated as separate cases. For this study, both MTSS and stress fracture injuries were recorded due to the fact that the diagnosis of the two injuries is very similar and MTSS is often a precursor for stress fractures.

Injury Site

Data concerning the specific site of injury of each athlete was recorded. For statistical purposes, the injuries were grouped into three anatomical regions. The femur was categorized as the upper leg (UL), the tibia and fibula as the lower leg (LL), and the metatarsals and navicular bones as the foot.

Academic Class and Sport

The academic class (Freshman, Sophomore, Junior, Senior) of each athlete at the time of injury was recorded from the files. Red-shirt athletes were classified according to their academic status and not their eligibility status. In addition, the sport of each athlete was accounted for and included. Since many of the cross country athletes participated in track, these sports were grouped together as track.

Time of Season

Data on the time of season during which the injury occurred was also noted for each subject. The time of season was divided into pre, mid and post season. Pre-season was defined as the first three months (0-3) prior to the first day of practice, mid-season as the first day of practice to the last official game including tournaments, and post-season as the last three months following the last official game. Schedules for all of the sports were used to determine the seasonal divisions.

Days to Treatment

The total number days, weeks or months from the onset of symptoms to the first encounter with the sports medicine physician was recorded for each subject. Because

many of the subjects reported having symptoms for less than a week, all data were reported as days to treatment.

STATISTICAL ANALYSIS

Relationships on injury incidence between variables were analyzed by the Sigma Stat statistical package using the chi square test for independence. A Kruskal-Wallis One Way Analysis of Variance on Ranks, was used to analyze days to treatment data. Significance was set at $P < 0.05$. These data were found to be non-normally distributed, hence the non-parametric test was used for analysis.