

**CHAPTER FOUR:
RESULTS**

OVERALL INJURY RATES

There was a 3.5% overall incidence of injury found in this study. There were a total of 28 injuries, which included both MTSS and stress fractures, out of 656 athletes. Of the 28 injuries, 22 were positively diagnosed as stress fractures while the remaining six injured athletes were diagnosed with MTSS following negative radiograph and bone scan results. The data that were analyzed in this study included both the stress fracture and MTSS recorded injuries. It should be pointed out that the results were not different from those that only included stress fracture data.

INJURIES BETWEEN AND WITHIN ACADEMIC CLASS

Freshmen athletes comprised 41% of the total athletic population in this study. Where as sophomores, juniors and seniors comprised 27%, 21% and 11% respectively. There was a significant relationship between the percentage of injuries and the academic class (Figure 1). The freshman class appeared to experience the greatest percentage of total injuries (67.8%) which agrees with the findings of Goldberg *et al.* (1994). They reported that over a 3-year period 67% of the stress fractures reported occurred in freshman athletes. It should be noted that there were no reported injuries in the senior class in this study. In addition, the incidence of injury within each class was also largest in the freshman class (Figure 2). These statistics appear to illustrate that freshmen have a greater risk of suffering a stress fracture than the athletes of the other academic classes.

ANATOMIC SITE

There was a significant relationship ($p < 0.001$) between the anatomical site of the injuries and the incidence. Among all the injuries, 74% occurred in the tibia and fibula (lower leg) (Figure 3). These results agree with the findings of Matheson *et al* (1987) and Taunton *et al* (1981) who reported that bones of the lower leg were the most reported sites of injury. There was not a significant relationship between the academic class and the anatomical site of injury (Figure 4). This was also found to be the case between the individual sports (Figure 5). This suggests that neither academic class nor sport affect where these injuries will occur.

INJURIES BETWEEN SPORTS

There were a total of 8 women's sports (basketball, lacrosse, track/cross country, tennis, volleyball, soccer, swimming, and softball) that were included in this study. Injuries were reported for only three of these sports. They were basketball, lacrosse and track/cross country. There was a significant relationship ($p = 0.002$) between the incidence of injuries that occurred and the sport (Figure 6). The greatest percentage of injuries (44.8%) occurred in the lacrosse players. However, when incidence was examined within each sport (Figure 7), there was not a significant relationship. This appears to be predominantly due to the differences in size of the roster for each individual sport. When just the stress fracture data were examined (Figure 8), track athletes made up the largest percentage of injured athletes followed by lacrosse. These findings agree with similar results found in the literature (Goldberg *et al.*, 1994; Johnson *et al.*, 1994).

POINT IN SEASON

There was no significant relationship between the incidence of injuries and the time of season ($p=0.578$) (Figure 9). There was also no relationship between the sport played and the point in season at the time of injury ($p=0.124$). Figure 10 shows the percentage of injuries that occurred pre, mid and post-season for each of the sports. Compared to the other sports, basketball had the greatest percentage (83%) of injuries occur during preseason. The relationship between anatomic site of injury and time of season is seen in Figure 11. There were no significant relationships ($p=0.545$) between sites of injury and the point in season of injury.

RELATIONSHIPS BETWEEN VARIABLES

The relationships among the variables sport, class, site and season were also examined. No significant relationships were seen between any of them. Table 1 shows the p values for the relationships between the variables. The lack of significance between the variables suggests that the incidence of injury is not affected by the interaction of these variables.

DAYS TO TREATMENT

There were no significant differences ($p=0.120$) in the median days to treatment between pre and mid-season injuries. This suggests that the time of season in which the injury occurred did not influence how many days passed before treatment was sought for the injury. The athletes injured in preseason had a median 31.5 days to seek treatment compared to midseason median of 14, the comparisons are seen in Figure 12. There was a statistically significant difference between the days to treatment and sport ($p=0.023$).

Figure 13 shows that there was a significant difference between basketball (median=56) and lacrosse (median=14). These results imply that it took basketball players significantly longer than lacrosse players to report an injury. Figure 14 shows the relationship between academic class and median days to treatment. Though there was no significant difference ($p=0.332$) it took juniors a median 66.5 days to report an injury compared to only 14 for freshmen and sophomores. The lack of significance may have been due to the extreme variability in days to treatment. For example, the range for juniors was 21-112 days to treatment compared to freshmen (7-56 days) and sophomores (4-56 days). In addition, there was no significant relationship ($p=0.264$) between anatomic site and days to treatment. Figure 15 shows that athletes with lower leg injuries took longer (median=21) to seek treatment.