

Artificial Success: Impact of Artificial Turf on Winning in NCAA Division II and NAIA Football

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Artificial turf use in the sport of American football began in 1966 in the Houston Astrodome, the home field of the University of Houston and the National Football League's Oilers (Jastifer et al., 2019). Since that time, artificial turf has undergone multiple rounds of improvements, and currently this "third generation" of artificial turf is used in 50% of NFL stadiums and in 71% of Football Bowl Subdivision venues (AP, 2023; The Athletic, 2023). While the impact of artificial turf has been studied in relation to biomechanical player performance (Wannop et al., 2020) and injuries (Gosnell et al., 2023), the potential impact of turf type on team success in football has not been explored. This study seeks to examine the impact of turf type (natural versus artificial) on winning within the often underexamined population of NCAA Division II (DII) and National Association of Intercollegiate Athletics (NAIA) schools, as these levels of collegiate sport allow athletic scholarships but lack the commercial interests and resources of NCAA Division I sport. Methods: Football field type and two-year win-loss records were obtained from institutional websites, while squad size, institution size, football expenses, and total athletic department expenses were obtained from the Equity in Athletics Data Analysis (EADA) database. Study inclusion criteria required that the win-loss records did not include forfeitures for COVID-19, as well as requiring that schools owned rather than leased or rented their competition field.

Results: A total of 155 of 162 (96%) DII schools and 87 of 95 (92%) NAIA schools met inclusion criteria with 92.9% of DII and 87.4% of NAIA schools using artificial turf. ANOVA analyses of the combined data set revealed significantly higher two-year win percentage for teams with artificial turf fields ($M = .5185$) than for the teams with natural turf ($M = .4067$), $F(1, 240) = 4.64$, $p = .032$. Separate analysis of the DII sample revealed no significant difference in win percentage, but it did reveal significantly higher mean total athletic expenses for the DII schools with artificial turf than the DII schools with natural turf fields ($p = .016$). The separate analysis of the NAIA sample revealed significantly greater ($p = .001$) win percentage for artificial turf ($M = .5554$) compared to natural turf ($M = .3130$). Pearson correlational analyses demonstrated significant relationships between win percentage and four study variables (squad size, institution size, football expenses, athletic expenses) for both the combined data sets and the DII sample. The NAIA data showed significant correlations between the win percentage and the number of football participants and also the total athletic expenses.

Implications: While the significant differences in win percentage based upon turf choice creates a novel finding, the correlation of winning with other study variables signal a need for further exploration of this topic at the DII and NAIA levels, as well as further research within other levels of football.

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