

THE EFFECTIVENESS OF CUSTOM ORTHOTICS AT REDUCING INJURIES IN A COLLEGE FOOTBALL TEAM

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ABSTRACT

INTRODUCTION: American football is a violent sport involving high velocity directional changes and high velocity impact. The sport is performed by athletes of above-average strength, speed and, in many cases, weight. Lower body half (defined as from the lumbar spine down) injuries are common in football. While a number of studies have been published discussing ankle, knee, neck and mouth injuries and devices to make football safer, the incorporation of custom-made orthotics into football shoes to help prevent lower body-half injuries has, of yet, not been studied. Therefore a study was conducted looking at the effect of custom-made orthotics on the injury rate for a college football team using the previous year's injury rate as the control. Secondary indicators such as satisfaction with orthotics and injury self-reports for this and previous seasons were also captured.

MATERIALS AND METHODS: This study was approved through the Logan College Institutional Review Board. Players from the Waynesburg College football team (an NCAA Division III team) were recruited into the study. All participating players signed an informed consent form which described the study, the study risks and benefits and participant study responsibilities. Inclusion criteria for the study were as follows: a football player active on the team at the time of the start of the study, having read and signed informed consent document. Exclusion criteria included failing to complete the season on the football team and/or failing to wear their orthotics for at least two weeks. Study participants filled out a pre-study questionnaire. Their feet were then scanned by a

local chiropractor using the Associate scanner and the scans used to fit the players with Ultra Tough and Extreme XT custom-made orthotics from Foot Levelers Inc., the sponsor of this study. The players were instructed to wear the orthotics in their practice and game football shoes for the entire season and reminded they could stop their use of the orthotics and thus their participation in the study at any time. At the end of the study players were requested to fill out a post-study questionnaire. Data from the college injury database was gathered for the 2004 and 2005 seasons and data related to injuries of the lower body-half was extracted. The data were coded and analyzed by a 3rd party consultant. Statistical programs used included Microsoft Excel version 11.0 and SPSS, version 10.0.

RESULTS: Two-thirds of players filling out the post-study questionnaire were still wearing their orthotics at that time. Lower body-half injuries decreased from 148 in 2004 to 126 in 2005. Significant percentage drops (method of multiple proportions) were seen in knee injuries (29 to 20) and in lumbar spine injuries (14 to 7). Small drops in 2005 injuries from 2004 were also seen in foot, ankle, lower leg, toes and patella injuries and small increases in 2005 were seen in hip and thigh injuries. Self-reports of injuries in 2005 compared to those in 2004 also supported the above findings. Satisfaction with the orthotics decreased with increasing class in school although no correlation with any measured parameters could account for this. Players with mostly forward movements such as defensive lineman, running backs and linebackers, in that order, reported the greatest satisfaction whereas players who made quick cuts or backpedaled significantly in their movements were the least satisfied, led by wide receivers who, as a group, reported the least satisfaction with the orthotics. All player groups except wide receivers reported above a neutral satisfaction level with their orthotics although standard deviations and ranges were large for most groups.

DISCUSSION: The drop in lower body-half injuries in 2005 compared to 2004 and especially the drop in lumbar spine and knee injury rates were the most significant findings of this study. In addition, the finding that players employing mostly forward movement in their positions and with limited cutting movements are more satisfied than players who backpedal or make quick changes in direction; this gives some indication of the groups that may benefit the most from these orthotics. Major limitations to the study were that the questionnaire was not completely validated before use and that data from self-reports of injuries in the 2004 time period was taken as 1/3 of the self-report of injuries from the 2002-2004 period. In addition, follow-up to the initial instructions given to the study participants regarding the break-in period for the orthotics could have been better leading to fewer study dropouts. Additionally, no objective injury data was available pre-2004 as the injury database was only initiated prior to the 2004 season. Future studies will need to have a modified questionnaire based on the results from the current study and a historically more complete injury database in order for stronger conclusions to be drawn.

CONCLUSIONS: Custom-made, flexible orthotics appear to have a positive effect on the lower-body half injury profile of college football players. The orthotics have been shown to survive being worn throughout the college football season. Future studies are needed to elucidate the nature and absolute magnitude of the positive effect on injury rate and to determine which player positions and which individual players will benefit most from the use of these orthotics.