

Injuries from Ultimate Frisbee

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ABSTRACT

Objective: This paper will explore ultimate frisbee injuries.

Method: This study uses an anonymous, retrospective, self-reported survey of 135 adult athletes at a Midwestern ultimate frisbee tournament. Subjects were queried regarding injuries to specific body parts, those causing missed activity, recurring injuries, medical care sought, basic demographic data, duration of participation, handedness, and eye color. Categorical data were analyzed by chi-square tests. Qualitative responses were categorized by themes.

Results: Respondents had a mean age of 28 years and 59% were male. Mean playing time was 8.2 hours per week and 7.5 total years. Ultimate frisbee injuries included muscle strains (76% of subjects), ankle (65%), knee (53%), shoulder (37%), head (30%), and rib (21%) injuries. Blisters/calluses and black toenails were frequently mentioned. Recurrent injuries were reported in 49%. Shoulder injuries were more common in men than women (47% versus 24%, $P < 0.02$). Of respondents, 88% have missed ultimate frisbee activity due to injury, and 71% have sought medical care for ultimate frisbee injuries.

Conclusions: The majority of surveyed ultimate frisbee players experience injuries and seek medical care. Health care professionals should be aware of the injuries associated with ultimate frisbee and further studies should focus on prevention and education strategies.

INTRODUCTION

The sport of ultimate frisbee is growing in popularity,

and there is little known about it in the medical literature. Ultimate frisbee is a non-contact disc sport played by 2 teams of 7 players on a field the size of a soccer field. The object of the game is to score goals, which are achieved when a player catches the disc in the end zone. The disc is advanced through the air and players are not allowed to run with it. Ultimate frisbee combines elements of soccer, football, and basketball, and players must run, cut, guard, jump, throw, catch, and at times layout (dive horizontally with an outstretched arm) for the disc. The sport is currently self-refereed.

Ultimate frisbee originated on the high school and college campuses of the 1960s and 1970s, but tended to be mainly a college sport at that time. It has since gained popularity at all levels, including high school, college, club, and masters, and consists of men's, women's, and mixed (co-ed) teams. Ultimate frisbee recently debuted as a medal sport at the 2001 World Games in Japan and is currently played by over 100,000 players worldwide in over 30 countries.¹

There is little information in the medical literature regarding ultimate frisbee and its associated injuries. A Medline search using the keywords "frisbee" and "ultimate frisbee" yielded few articles, none of which are specific to the sport of ultimate frisbee. The first report was a letter to the editor in 1975 describing "frisbee finger," an abrasion of the middle finger of the dominant hand from repetitive throwing.² Another letter followed thereafter, suggesting adhesive tape to the finger for prevention.³ Beer and Fleming reported that dark-eyed individuals performed better at throwing a frisbee through a hoop.⁴ (If it has been found that eye color affects frisbee skill, one might wonder if it also affects injuries.) A 1989 article reported distal ulnar artery thrombosis in a frisbee player, necessitating hospitalization.⁵ Muller et al discussed hypothenar hammer syndrome in sports, and cited the frisbee player's injury from the prior article.⁶ Finally, complete rupture of the deltoid ligament of the ankle was reported in 1991.⁷ None of these studies specifically address injuries related to the sport of ultimate frisbee.

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The most applicable and complete information on ultimate frisbee injuries was found using the search engine SPORT Discus with the same keywords. In 1991 Marfleet described thigh muscle strains, ankle ligament sprains, and skin abrasions/friction burns to be the most frequent injuries.⁸

Because there is limited information on the subject of ultimate frisbee injuries, this study was undertaken to further evaluate ultimate frisbee injuries and to educate physicians about the sport.

METHODS

Adult attendees at a Midwestern ultimate frisbee tournament of approximately 900 players, sponsored by the Ultimate Players Association in 2002, participated by voluntarily completing an anonymous survey. In order to advance to this regional tournament, teams had participated and advanced from sectionals; regionals are the final step before nationals, so the level of play was competitive. Athletes were questioned about injuries to specific body parts, injuries causing missed activity, recurring injuries, and injuries for which medical care was sought. Participants were also queried regarding age, gender, duration of participation, handedness, and eye color. For specific survey questions see Table 1. Categorical data were summarized and analyzed by chi-square testing using Epi-Info software. Qualitative responses were categorized by type and method of injury.

RESULTS

Of the 900 athletes, 135 returned the survey (129 completed both sides). Survey respondents included 79 men (59%) and 56 women (41%) with mean age of 28 (range 18-46) years. They reported playing ultimate frisbee for a mean 8.2 (range 0-20) hours per week and an average of 7.5 (range 0-26) total years. Seventy-five percent of respondents started playing between ages 17-22.

The most common specific lifetime injury was muscular, reported in 103 respondents (76%), followed by ankle, knee, shoulder, head, and rib injuries (Figure 1). Other injuries were reported by 99 respondents (77%) and consisted of minor injuries, mostly of the feet (78%), such as blisters, calluses, black toenails, lost toenails, and abrasions. Ruptured spleen was reported in 1 subject.

Muscle injuries were further broken down into subtypes (Figure 2). Lower extremity muscles, mainly hamstrings and quadriceps, were injured most frequently. Calf and groin strains were also common, and upper extremity muscle injuries were reported less often.

Table 1. Ultimate Frisbee Survey Questions

Dear Ultimate Player,
My name is Kristen Hakes Reynolds and I am a Family Practice Physician in Milwaukee, Wisconsin. I am conducting a survey on ultimate frisbee-related injuries. There is very little written in the medical literature regarding our sport and its associated injuries. I would like to change this. Please help to get our sport known in the medical community by filling out this anonymous survey. You can drop your completed survey in the large box at the tournament coordinator's station. Thank you for your participation!

1. Are you 18 years of age or older? Yes No
2. What is your age? _____
3. What is your gender? Male Female
4. Are you right- or left-handed (while playing ultimate frisbee)?
 Rt Lt
5. What is your eye color?
a. Blue b. Green c. Dark brown d. Hazel e. Other _____
6. Approximately how many hours per week do you play ultimate frisbee? _____
7. How many years have you played ultimate frisbee? _____
8. Have you ever experienced a muscle strain/pull while playing ultimate? Yes No
If so, which body part? _____
9. Have you ever injured your ankle while playing ultimate?
 Yes No
If so, please describe. _____
10. Have you ever injured your head while playing ultimate?
 Yes No
If so, please describe. _____
11. Have you ever injured your shoulder while playing ultimate? Yes No
If so, please describe. _____
12. Have you ever injured your knee while playing ultimate?
 Yes No
If so, please describe. _____
13. Have you ever injured your ribs while playing ultimate?
 Yes No
If so, please describe. _____
14. Have you ever sought out medical care for an ultimate-related injury? Yes No
If so, was there a diagnosis? Yes No
What was the diagnosis? _____
15. Have you ever needed to miss a practice or game due to an ultimate-related injury? Yes No
If so, for what injury? _____
For how long? _____
16. Have you ever experienced an ultimate frisbee-related injury that was not mentioned above? (Can be during game/practice or related to repetition/overuse. For example, collision injuries, joint injuries, sore body parts, calluses/blisters, etc.)
 Yes No
If so, please explain. _____
17. Do you have any recurring injuries? Yes No
If so, please describe. _____

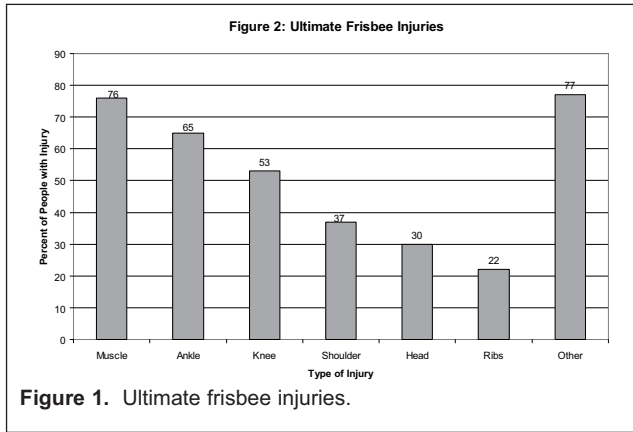


Figure 1. Ultimate frisbee injuries.

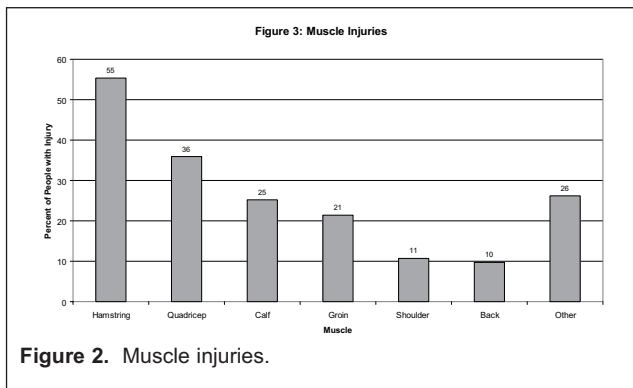


Figure 2. Muscle injuries.

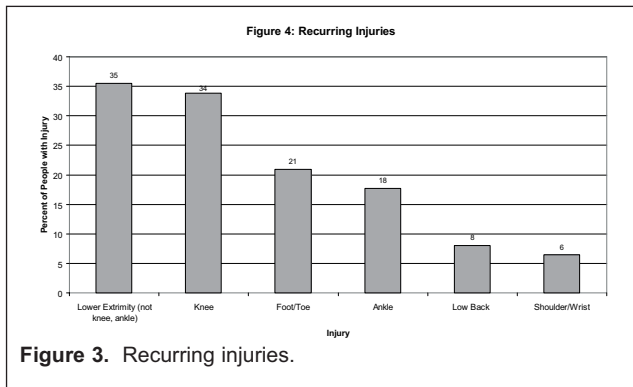


Figure 3. Recurring injuries.

Ankle injuries were reported by 88 respondents (65%), mostly by rolling or twisting the ankle due to an uneven surface or hard ground. Knee injuries were reported in 68 (53%), but no specific knee injury was discernable. Forty-eight players (37%) had shoulder injuries, and a third of those were from doing a layout. Forty players (30%) suffered a head injury, and of those, 14 (35%) reported a concussion. Fifteen (38%) of the head injuries resulted from colliding with another player or the disc, and 13 (33%) were from laying out.

Half of respondents reported recurring injuries

(Figure 3), the majority of which were lower extremity as well. Recurrent knee injuries were reported in over a third of respondents. Recurrent foot, toe, and ankle injuries were also noted.

Shoulder injuries occurred more frequently in men than women (35, 47% versus 13, 24%, $P < 0.02$). All other injuries were analyzed but no significant differences were found between genders ($P = 0.08-0.99$).

One hundred thirteen respondents (88%) missed a game or practice from an injury incurred while playing ultimate frisbee, primarily due to knee (37, 33%) and ankle (30, 27%) injuries. Ninety-one respondents (71%) sought medical care for ultimate frisbee injuries, again mainly for injuries to the lower extremity. All 135 participants (100%) reported some form of injury, ranging anywhere from blisters/calluses to much more serious injuries.

DISCUSSION

The results of this survey demonstrate that ultimate frisbee injuries are common, that players are plagued by recurrent injuries, and that medical care is often sought. In comparing these results to those of Marflett in 1991,⁸ this study confirms a high rate of lower extremity injuries. This injury pattern is consistent with sports requiring sprinting and cutting, such as soccer. In fact, in a study by Pardon in 1977, the most frequent soccer injuries were those to the knees, thighs, and lower legs (mainly strains, pulled muscles, torn menisci, and contusions).⁹

Given that players must catch a fast moving, hard plastic disc, one might suspect hand injuries to be common. However only 10 people (8%) reported hand injuries. This is consistent with Marflett's finding of hand injuries in 5.7%.⁸

While it has been shown that dark-eyed individuals performed better at throwing a frisbee through a hoop,⁴ we found no difference in injuries between participants with different eye colors.

Ultimate frisbee also entails some unique maneuvers, such as a layout for the disc. This could account for the high rate of shoulder injuries. Though not specifically addressed in this study, it is of the author's personal experience and opinion that men tend to be more aggressive than women in this regard, which could account for the greater number of shoulder injuries in men. Proper technique for laying out has been described in the literature.⁸

Several factors that contribute to sports injuries have been reported in the literature, including athlete's conditioning, skill level, pre-game preparation, warming

up, stretching, fluid and nutrition status, duration of play, fatigue, and field condition (level, uneven, hard, soft, etc.). Pre-season injury prevention and conditioning programs have been shown in the literature to reduce injuries, including serious knee injuries, in soccer players.^{10,11} Use of prevention strategies such as these, proper attire and field conditions, and education of players by physicians and coaches would be helpful in reducing ultimate frisbee injuries.

Though this is 1 of few studies detailing ultimate frisbee injuries, it is limited by the retrospective nature and survey format; therefore, there may be reporting bias. Also, because information was not received directly from medical professionals, the accuracy of reported injuries is unclear. Though only 1 tournament was used in this study, the participants varied widely in age, number of years playing and frequency of play, providing for a wide variety of respondents, including similar numbers of men and women.

CONCLUSION

As ultimate frisbee grows in popularity, physicians need to be aware of its associated injuries. Lower extremity injuries, such as muscle strains, ankle sprains, and knee injuries are common and contribute to missed practices and games. Recurrent injuries, mainly to the knees and lower extremities, occurred in half of respondents. Foot injuries, including blisters and toenail injuries,

also occur frequently. Most players (71%) have sought medical care for ultimate frisbee injuries. Well-informed health care professionals will be able to treat and educate the growing numbers of young adults participating in this exciting sport. Future studies should focus on prevention and education strategies.

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