

The Relationship between Sport Type and Prevalence of Athletic Injuries at UWRF  
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## **Introduction**

Many athletes face the incidence of injury at some time in their sport career. Injuries are sustained in sports on a regular basis as the ultimate risk factor that balance the benefits that sports provide to athletes. It is important for the National Collegiate Athletic Association (NCAA) and the collegiate institution to help prevent injuries and keep them at a regulated level. Athletic injuries can be costly to the player in many ways. Injuries are a source of pain as well as a financial loss when treated at medical facilities. The injury can also cost the player key participation time in games and practice. For this study an injury is classified as any injury sustained during colligate sport practice or competition, that took the player out of practice or a game for one or more days. The injury was reported to and treated by a certified athletic trainer at the University of Wisconsin-River Falls.

The purpose of this research project is to explore the relationship between sport type and athletic injuries sustained at the University of Wisconsin-River Falls. We are looking at the relationship of injuries per population of players in a select group of varsity sports at UWRF. This information will help us to determine which sports have the highest and lowest prevalence of injury. The data will provide beneficial information for coaching staff and athletic personnel. The data will help to identify high injury sports and can be used to improve conditioning or coaching tactics as well as indicate where more medical staff could be utilized.

Our hypothesis is that football will have the highest prevalence of injuries. Our deduction comes from the large population of athletes in this sport, close to one hundred players. As well as the heavy contact that is sustained suitable to the nature of the sport.

## Literature Review

There were many studies published that look at sport injuries. The National Athletic Training Association estimates that out of the 7.5 million students who play sports, one-third of them will get hurt (Dillon).

In 1988, the National Collegiate Athletic Association (NCAA) initiated the use of the Injury Surveillance System (ISS). This system has been used to collect data on injuries sustained in collegiate sports. The original ISS studies 16 sports. Women's ice hockey was not added to the surveillance system until 2000-2001.

Several studies have been conducted based on the data collected using the ISS and other data collection tools like it. One such study, "Epidemiology of Collegiate Injuries for 15 Sports: Summary and Recommendations for Injury Prevention Initiatives", looks at the injury data from the beginning. The study talked about the changing climate of sports. It states that there has been an increase of participation in sports by both men and women (80% increase for women and 20% increase for men). The amount of injury reporting also fluctuated, they estimate that an increase of concussion reporting was due to education about symptoms and recognizing concussions. They also hypothesized that there was a decrease in other injury reporting because of the advancement of sports equipment such as helmets, braces, and other safety gear.

Another study found which was published in The American Journal of Sports Medicine was very similar to our study. "Epidemiology of Severe Injuries Among United States High School Athletes: 2005-2007" looked at what sports were causing these injuries to accumulate. The study reported that severe injuries accounted for about 15% of all high school sport-related injuries. They found that severe injuries were more likely to occur in competition rather than during practice. The study defined a severe injury as one that would take a player out of

participation for  $\geq 21$  days. Football was the leading cause of severe injuries, followed by wrestling and women's basketball. The study compared injury prevalence between men and women's sports in which they found that overall men sustained more injuries than the women. Then when they directly compared sports, men's basketball verses women's basketball, they found that women had the higher severe injury rate.

In our study we weren't looking at severe injuries only rather at injuries in general. We found that comparatively injury rates were higher in both men's and women's basketball. When comparing them with each other our data showed that men's basketball injuries were about 10% higher than women's basketball. Another difference in our study results were that football was not ranked our number one sport for injury. Prior to doing our study we hypothesized that football would be the leading cause of injury but found that to be false at least at UWRF.

The final piece of literature that was reviewed was "Patterns of Recurrent Injuries Among US High School Athletes, 2005-2008". This study stated that of the injuries sustained yearly in sports 10% of those injuries are recurrent injuries. "The recurrent injures can be more severe than the initial injury, and previous injury correlates strongly with an increased risk of subsequent injury." (Swenson, et. Al.) The study defined a recurrent injury as an injury that occurred to a location on the body that sustained the same type of injury before. Their findings showed that while new injuries occurred eight times more frequent than recurrent injuries the recurrent injuries were more likely to happen in competition, a very important aspect of sports. They found that joints were the most frequent body site to be re-injured and of those joints the ankle was the most diagnosed recurrent injury. It would be interesting to take a deeper look into our data to divide out severe injury rates as well as recurrent injuries.

All of these studies show that there is an importance in studying injury rates of athletes. I believe our study will help shed some light on the injuries sustained during UWRF athletic activities. Our study can contribute to the body of knowledge out there about sport injuries by identifying that there are other high risk sports for injury other than football. Our study showed that basketball had the highest injury for men and women. Our study can be used to help athletic staff find out why our basketball injuries are so high at UWRF.

## **Methods**

To be able to conduct our study we had to first fill out an Institutional Review Board for the Protection of Human Subjects (IRB) application. The population we would be looking at was all athletes at UWRF that were treated at the Athletic Training Rooms over the past five years. Our study did not need to take in account age, skill level, or race. Our study merely used gender of the athletes to separate them in their prospective sports.

Anonymity of the subjects was important because we did not want to attach any names to our study also due to privacy policies on campus. We were able to accomplish this with our faculty advisors' help; they compiled the records and excluded the names of the athletes from the information. We also gained a signed letter of permission to utilize these records from the Certified Athletic Trainers.

The data that we used was secondary data collected by athletic training staff and assembled in the Datalys Injury Surveillance Tool. The Datalys Injury Surveillance Tool is a computer program that allows injuries to be recorded as well as additional information that is relevant to the injuries. The Datalys Injury Surveillance Tool is new to the university this year; this caused a few problems for our research team. We were hoping to utilize a larger variety of

sports for our study but because of the new system not having some sports such as softball recorded yet we could not use those sports in our study. That also meant that the injury information from that past years that we wanted to review might be in a different format from the new system. Thankfully we did not have to directly deal with the formatting because Crystal Lanning our main faculty advisor did that work for us.

We then obtained the data and broke it down for our study. For this study an injury is classified as any injury sustained during colligate sport practice or competition, that took the player out of practice or a game for one or more days. The injury was reported to and treated by a certified athletic trainer at UWRP. There were several minor injuries that allowed the player to return to play the same day that we had to exclude from our study because they did not meet our parameters. By excluding these injuries we had a smaller amount of data to sort through.

## **Results**

Our results show that the highest number of injuries sustained per the number of athletes on the team, was basketball. This was the case for both the men and women's teams at UWRP. The men's team injuries were at 64.9% and the women's team was at 57.97%. Looking at a literature review we compared our findings to the results found in "Epidemiology of Severe Injuries Among United States High School Athletes," our results were similar. Girl's basketball in that study had the highest percentage of injuries, while the boy's basketball came in at number two on the percentage list just after football.

We had hypothesized that football would be the leading cause of injuries due to the high contact sport and the population of athletes in the sport. This wasn't the case but football came in

at number three for the three men's sports that we looked at, which were basketball, hockey, and football.

When we took a closer look at the ages of the individuals that were prone to injuries we found that during the years that teams had more freshmen on the team were the years that the injury levels went up. We believe this was the case because of the lack of experience that the freshmen had coming from high school to college and the inexperience that they had. We also thought the injury levels were up because of the higher demand of physical activity. This number was especially significant in the football data. We concluded that the age and ability levels have a lot to do with the number of injuries that will occur during the sports' season.

When looking at the data, it seemed to us that we didn't know exactly if all the injuries were recorded into the system for each sport during each year. When looking at the men's basketball data for 2006-2007 season, 100% of the injuries were classified as either a season ending injury or an injury that took the player out for one or more practices. There were no minor injuries recorded throughout the entire season. It that doesn't make sense when looking at the data from the previous and following years since basketball is a contact sport and there were no minor injuries. So when looking at the data that was collected from the Injury Surveillance System, it doesn't make sense that there were no minor injuries in that 2006-2007 season for the men's basketball season.

Since we questioned the recording of the data for the 2006-2007 men's basketball season, we then had to question if the Injury Surveillance System did not record all the injuries that happened throughout the season for each sport that we used within our study. This then could change the outcome of our data, if in fact the data was not recorded. We couldn't even check if

we wanted to on the missing data because this was the only source of recorded data that was taken for these sports, so we will never fully know if all the injuries were recorded.

This information helps us to see that when training younger athletes, coaches need to focus on personal safety and the preparation, as well as conditioning of the younger and inexperienced athletes. Concentrating on conditioning and preparation for body fatigue and constant use will better enable coaches to provide athletes the groundwork for the preparing them for the caliber of competition they will be competing in at the collegiate level.

## **Discussion**

Our study can help athletes identify sports that have a high risk for injury at UWRF. If the player has recurrent injuries they might choose not to participate in a sport if they know that sustaining an injury is more likely in that sport than another. Our study is not exclusively for the athletes but for athletic staff such as coaches, athletic trainers, and conditioning coaches.

It is important for the athletic staff at UWRF to identify high risk injury sports. The athletic training staff needs to have adequate staffing of risky sports to attend to those injuries sustained. It is also important for coaches to know if their athletes have the highest injuries at UWRF. Perhaps something needs to be re-evaluated in the training season. The athletes might need more pre-season conditioning or perhaps lighter practices need to happen halfway through the season to deal with overuse injuries.

Our research is actually being utilized by the athletic staff at UWRF to help decrease the risk of injury. When looking at our research as well as other research we are seeing the most injuries being sustained in sports that utilize the hardwood courts of the Karges gymnasium. The basketball injuries are the highest on our campus, it is believed that the pounding on the un-

giving hardwood floor is putting increased strain on the joints of the body. Our research is possibly going to be utilized in a proposal to get a new gym floor to help the injury rates at UWRF decrease.

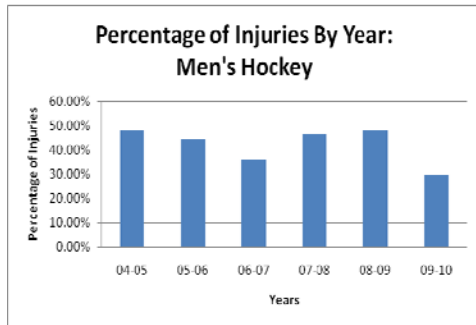
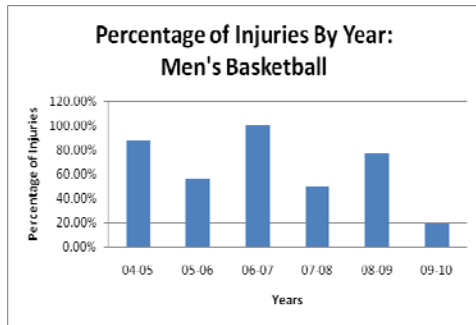
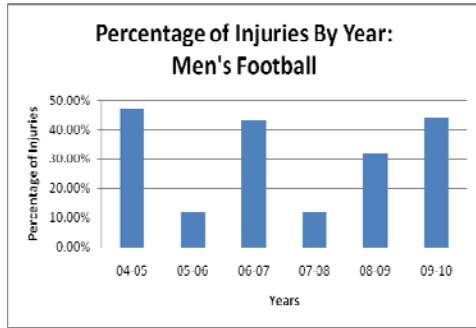
Looking back at the literature on studies like ours they somewhat compare. We did have high findings of injuries in basketball which was the number two result in the Epidemiology study. We did however find there to be a higher prevalence over all in women's sport injuries but we do have a higher rate of female sports at UWRF. Further exploration of our data could show a more accurate comparison to the previous studies conducted.

The overall meaning of our findings is that injuries are a prevalent risk in sports even when methods are used to decrease injuries. Our finding can hopefully be used as an eye opener to the continued risk of athletes at UWRF and maybe allow athletic staff to get a new prospective on coaching, conditioning, training, and prevention in the future. Just getting this information out in the open is the real purpose of our study.

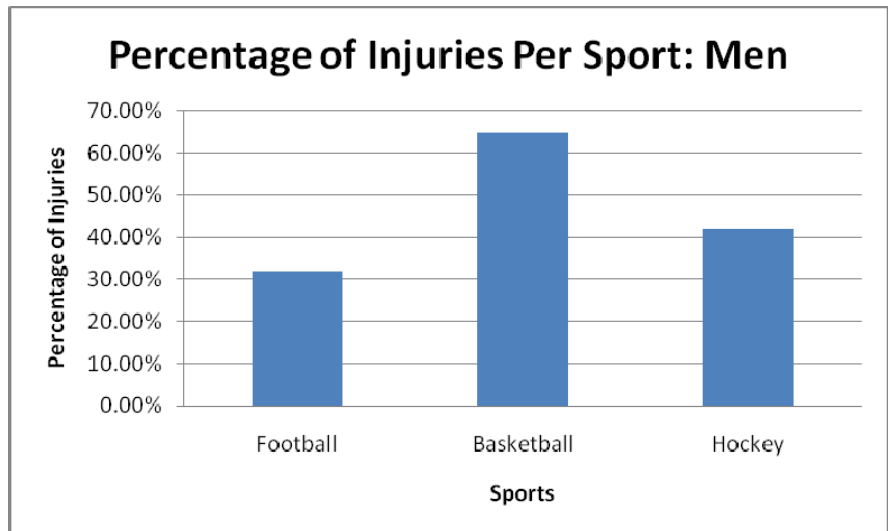
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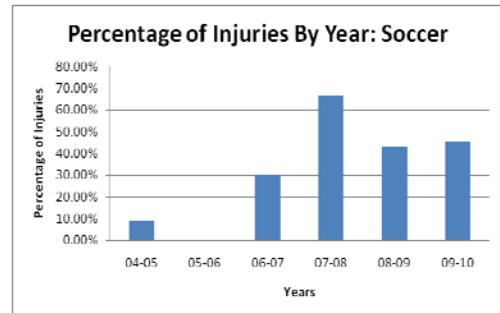
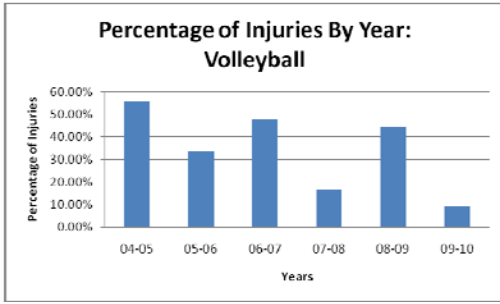
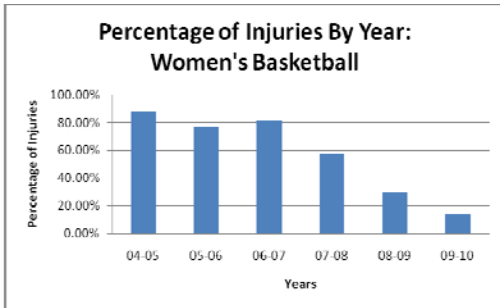
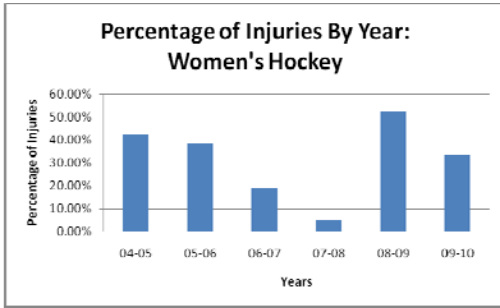
## MEN'S RESULTS



Year	Sport	# of Injuries	# of Participants	% of injuries
04-05	Football	32	68	47.06%
05-06	Football	12	98	12.24%
06-07	Football	43	100	43.00%
07-08	Football	12	97	12.37%
08-09	Football	32	100	32.00%
09-10	Football	43	97	44.33%
Average				<b>31.83%</b>
04-05	Basketball	14	16	87.50%
05-06	Basketball	9	16	56.25%
06-07	Basketball	15	15	100.00%
07-08	Basketball	8	16	50.00%
08-09	Basketball	10	13	76.92%
09-10	Basketball	3	16	18.75%
Average				<b>64.90%</b>
04-05	Hockey	13	27	48.15%
05-06	Hockey	12	27	44.44%
06-07	Hockey	10	28	35.71%
07-08	Hockey	13	28	46.43%
08-09	Hockey	12	25	48.00%
09-10	Hockey	8	27	29.63%
Average				<b>42.06%</b>



## WOMEN'S RESULTS



Year	Sport	# of Injuries	# of Participants	% of injuries
2004-05	Soccer	2	22	9.09%
2005-06	Soccer	0	21	0.00%
2006-07	Soccer	7	23	30.43%
2007-08	Soccer	14	21	66.67%
2008-09	Soccer	9	21	42.86%
2009-10	Soccer	10	22	45.45%
Average				<b>32.42%</b>
2004-05	Volleyball	10	18	55.56%
2005-06	Volleyball	7	21	33.33%
2006-07	Volleyball	10	21	47.62%
2007-08	Volleyball	4	24	16.67%
2008-09	Volleyball	8	18	44.44%
2009-10	Volleyball	2	22	9.09%
Average				<b>34.45%</b>
2004-05	Basketball	15	17	88.24%
2005-06	Basketball	10	13	76.92%
2006-07	Basketball	13	16	81.25%
2007-08	Basketball	8	14	57.14%
2008-09	Basketball	3	10	30.00%
2009-10	Basketball	2	14	14.29%
Average				<b>57.97%</b>
2004-05	Hockey	8	19	42.11%
2005-06	Hockey	8	21	38.10%
2006-07	Hockey	3	16	18.75%
2007-08	Hockey	1	20	5.00%
2008-09	Hockey	10	19	52.63%
2009-10	Hockey	7	21	33.33%
Average				<b>31.65%</b>

