Name: John Smith  Topic: Sports Injuries

Kinesiology Library Orientation

The purpose of this assignment is to learn how to:
A) Find a book or eBook using the Library Catalog.
B) Find an article using SPORTDiscus.
C) Find an article using ScienceDirect College Edition.
D) Recognize scholarly books, articles, and Studies.
E) Create a Reference page and cite references in NLM style.

NOTE: Supporting documents and additional help for this assignment can be found on the KIN140 LibGuide.

A. BOOK AND EBOOKS
   1. Go to the Library Catalog and locate a book or eBook on your topic. Note: If you discover the library has no books/eBooks on your topic you may have to change or broaden your topic. For instance, instead of trying to find “teaching volleyball in the middle school”, try “teaching volleyball”, or just “volleyball”.
   2. a. If a book, write down the call number and retrieve it.
   b. If an eBook, open the eBook online. (You do not have to check it out / download it in order to print, but you may have to create a personal account to use the print feature.)
   3. Print a copy of the Title Page. If any publication information is omitted from the Title Page (such as the copyright date, publisher, and/or place of publication) then find that page and print it as well. This information is sometimes noted on the back of the Title Page, or the next page. You will need this information when you create your REFERENCES Page. Label these pages A.

EVALUATING BOOKS AND EBOOKS

1. Examine your book and circle your answer.

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Explain:
Reliable/expert/author/editor/publisher.
Bibliography.
Scholarly tone.
B. SPORTDiscus ARTICLES

1. Go to SPORTDiscus and find a full text article on your topic. (Abstracts are not accepted.)
   - Go to the library's Home Page and click on Databases.
   - Follow this path: Databases > Go to Databases by Subject > Kinesiology > SPORTDiscus

2. Print the first two pages of your article and the bibliography. Label them B. (Note: You will need to examine the entire article carefully in order to answer the questions below.)

3. Email a copy of the article to yourself.

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EVALUATING SCHOLARLY ARTICLES

2. Examine your article for scholarly ness. Circle you answers.

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Multiple authors, advanced degrees.
8 page article.
Long bibliography.
Scholarly tone.

C. SCIENCEDIRECT COLLEGE EDITION STUDIES

4. Go to ScienceDirect and find a full text "Study" on your topic. (HINT: Include the phrase – Original Research Article – in your search.)
   - Go to the library's Home Page and click on Databases.
   - Follow this path: Databases > Go to Databases by Subject > Kinesiology > ScienceDirect

5. Print the first two pages of your article and the bibliography. Label them C. (Note: You will need to examine the entire article carefully in order to answer the questions below.)

6. Email a copy of the article to yourself.
7. Use the article to answer Section C.

RECOGNIZING STUDIES

3. Examine your article to determine if it is a Study. Circle your answers.

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Is this a Study? Yes

Explain:

Multiple authors. Hypothesis is asked in title and answered in conclusion. All characteristics were answered with yes.

D. CREATING A REFERENCES PAGE

- The page will be titled – REFERENCES
- Center the title.
- Cite each of your sources in proper NLM style. Double space
- Citations should be numbered and in alphabetical order.

E. COMPLETE AND TURN IN ASSIGNMENT

Collect all the documents and place them in the following order:

- This Handout
- Printout A
- Printout B
- Printout C
- REFERENCES Page
- Turn your assignment in to your instructor by the following date ________________
Introduction to
SPORTS MEDICINE
and
ATHLETIC TRAINING
Second Edition

Robert C. France
An Epidemiologic Comparison of High School Sports Injuries Sustained in Practice and Competition

Julie A. Rechel; Ellen E. Yard, MPH; R. Dawn Comstock, PhD†

*The Research Institute at Nationwide Children’s Hospital, Columbus, OH; †The Ohio State University, Columbus, OH

Context: More than 7 million US high school students play sports.

Objective: To compare practice and competition injury rates and patterns in 5 boys’ sports (football, soccer, basketball, wrestling, and baseball) and 4 girls’ sports (soccer, volleyball, basketball, and softball) during the 2005–2006 school year.

Design: Prospective injury surveillance study.

Setting: Injury data were collected from 100 nationally representative United States high schools via High School RIC (Reporting Information Online).

Patients or Other Participants: Athletes from participating high schools injured while participating in a school-sanctioned practice or competition in one of the above sports.

Main Outcome Measure(s): Practice and competition injury rates, body site, diagnoses, and severity.

Results: High school athletes participating in these 9 sports at participating schools sustained 4350 injuries during the 2005–2006 school year, which corresponds to an estimated 1,442,533 injuries nationally. The rate of injury per 1000 athlete-exposures was higher in competition (4.83) than in practice (1.60) (rate ratio [RR] = 2.75, 95% confidence interval [CI] = 2.68, 2.80). Of all sports, football had the highest competition (12.09) and practice (2.64) injury rates per 1000 athlete-exposures. Compared with injuries sustained during practice, higher proportions of competition injuries were head/face/neck injuries (proportion ratio [PR] = 1.51, 95% CI = 1.34, 1.64), particularly in boys’ soccer (PR = 7.74, 95% CI = 2.53, 23.65) and girls’ basketball (PR = 8.03, 95% CI = 2.39, 15.22). Competition injuries were more likely to be concussions (PR = 2.02, 95% CI = 1.58, 2.62), especially in boys’ soccer (PR = 6.51, 95% CI = 2.01, 20.05) and girls’ basketball (PR = 5.83, 95% CI = 2.06, 16.49). Higher proportions of competition injuries caused the athlete to miss more than 3 weeks of play (PR = 1.28, 95% CI = 1.03, 1.58), particularly in baseball (PR = 5.47, 95% CI = 1.46, 8.11) and volleyball (PR = 2.86, 95% CI = 1.01, 8.24).

Conclusions: Rates and patterns of high school sport injuries differed between practice and competition. Providing athletic trainers with this information is a crucial step in developing the targeted, evidence-based interventions required to effectively reduce injury rates among the millions of high school student-athletes.

Key Words: Injury surveillance, injury rates

Key Points
- Among a representative sample of United States high schools, competitions resulted in higher injury rates and greater proportions of head/face/neck injuries, concussions, and severe injuries than practices did.
- Sprains/strains and lower extremity injuries accounted for the majority of all injuries, regardless of sport or setting.
- Continued surveillance is warranted to monitor changes in practice and competition injury rates over time and to assess the effects of future interventions.

After a 16.1% participation increase during the past decade, more than 7 million United States high school athletes competed in interscholastic sports during the 2005–2006 school year, with highest participation in football and basketball. Interscholastic sports play a key role in the successful development of students, being specifically linked to higher grade point averages, fewer school absences, and better behavior. However, sport participation can lead to injury. Although the rate of high school sport injuries appears to have decreased in the past decade, more than 1.4 million injuries were sustained by high school athletes during the 2005–2006 school year. Comparing sport, sex, and exposure-specific patterns of injuries occurring in high school athletes can provide certified athletic trainers (ATs) with the scientifically based evidence needed to make effective, targeted recommendations for injury prevention.

Several research studies exist on the epidemiology of high school athletic injuries, many focusing on only one sport or one particular type of injury. Although these studies are important for educating medical professionals, coaches, athletes, and parents in specific disciplines, they cannot describe injury patterns across a range of high school sports. No group has completed a longitudinal study comparing patterns of practice and competition injuries across a variety of boys’ and girls’ sports in a nationally representative sample of high schools. Authors of 2 comprehensive studies followed a large number of high school athletes participating in a variety of sports prospectively through 1 or more seasons, but neither group compared patterns of practice and competition injuries. Additionally, these studies were either conducted a decade ago or were limited in geographic location. Our objective was to compare the epidemiology of practice and competition injuries in high school athletes participating in 5 boys’ sports (football, soccer, basketball, wrestling, and baseball) and 4 girls’ sports (soccer, volleyball, basketball, and softball). For these 9 sports, the specific aims were to (1) calculate rates of high school...
practice and competition injuries, (2) describe the body site, diagnosis, and severity of practice and competition injuries, and (3) compare body site, diagnosis, and severity of injury between practice and competition.

METHODS

High School RIO (Reporting Information Online, The Research Institute at Nationwide Children's Hospital, Columbus, OH), an Internet-based injury surveillance system collecting injury and exposure data for high school athletes participating in 5 boys' sports (football, soccer, basketball, wrestling, and baseball) and 4 girls' sports (soccer, volleyball, basketball, and softball) during the 2005-2006 school year, has been described in detail previously. Briefly, all eligible schools (i.e., all US high schools with an AT affiliated with the National Athletic Trainers' Association [NATA] willing to serve as a reporter) were categorized by US Census geographic location (northwest, midwest, south, and west) and high school size (enrollment ≤1000 or >1000 students). Schools were then randomly selected from each stratum to obtain 100 study schools. A weighting algorithm based on the inverse probability of participation schools' selection into the study (based on US Census geographic location and high school size) was then applied to individual case counts in order to calculate national injury estimates. If a school dropped out of the study, another school was randomly selected from the same stratum for replacement. The ATs at participating schools reported injury and exposure data weekly through the High School RIO Web site.

An athlete-exposure (AE) was defined as 1 athlete participating in 1 practice or competition. An injury was defined as a condition meeting the following 3 criteria: (1) occurred as a result of participation in an organized high school practice or competition, (2) required medical attention by an AT or physician, and (3) resulted in restriction of the student-athlete's participation for 1 day or more beyond the day of injury. The ATs completed injury reports, which included athlete demographics (e.g., age, weight, year in school), the circumstances surrounding the injury event (e.g., mechanism, time in practice or competition, position played), and characteristics of the injury (e.g., body site, diagnosis, severity). For each injury, ATs were able to view and update submitted injury reports as needed throughout the study period.

Data were analyzed using SPSS software (version 14.0; SPSS Inc, Chicago, IL) and EpInfo (version 6.0; Centers for Disease Control and Prevention, Atlanta, GA). The SPSS Complex Samples module rounds some numbers to the nearest even digit (rather than to the nearest digit) for statistical reasons. Injury rates were expressed as the ratio of unweighted injury counts per 1000 AEs. All other injury analyses utilized national estimates, with the standard errors for comparisons between high school practices and competitions adjusted for the High School RIO sampling plan using the SPSS Complex Samples module. Rate ratios (RRs) and proportion ratios (PRs) were calculated with 95% confidence intervals (CIs). An RR or PR ≥1.00 suggests a risk association, whereas an RR or PR <1.00 suggests a protective association. All CIs not including 1.00 were considered statistically significant. For example, the calculation comparing the overall rate of injury between competition and practice is as follows:

$$RR = \frac{\text{No. of competition injuries}}{\text{No. of competition AEs}} \times 1000$$

$$+ \frac{\text{No. of practice injuries}}{\text{No. of practice AEs}} \times 1000$$

As an example of PR calculation, the following compares the proportion of concussions between competition and practice:

$$PR = \frac{\text{National estimated No. of competition concussions/national estimated No. of total competition injuries}}{\text{National estimated No. of practice concussions/national estimated No. of total practice injuries}}$$

We were granted a waiver of the informed consent/assent requirement under the Institutional Review Board Latitude to Approve a Consent Procedure that Alters or Waives Some or All of the Elements of Consent, §46.116. This study was approved by the Institutional Review Board at The Research Institute at Nationwide Children's Hospital.

RESULTS

Injury Rates

During the 2005-2006 school year, athletes participating in 5 boys' sports (football, soccer, basketball, wrestling, and baseball) and 4 girls' sports (soccer, volleyball, basketball, and softball) at a nationally representative sample of 100 high schools sustained 4350 injuries (2110 in practice and 2240 in competition). As seen in Table 1, these injuries occurred during 1750 764 AEs (1246499 practice AEs and 484265 competition AEs), resulting in a total injury rate of 2.31 injuries per 1000 AEs. The rate of injury per 1000 AEs was higher in competition (4.63) than in practice (1.69) (RR = 2.73, 95% CI = 2.58, 2.90). In practice, the highest rate of injury per 1000 AEs occurred in football (2.54), followed by wrestling (2.04) and boys' soccer (1.58). In competition, the highest rate of injury per 1000 AEs occurred in football (12.09), followed by girls' (5.21) and boys' (4.22) soccer. The 4350 reported injuries represent an estimated 1442533 injuries (683199 in practice and 759334 in competition) sustained by high school athletes participating in these 9 sports nationally.

Body Site of Injury by Type of Exposure

Most injuries affected the lower extremities (n = 817944, 57.2%) or upper extremities (n = 307837, 21.5%) followed by the head/face/neck (n = 208348, 14.6%) and trunk (n = 95294, 6.7%). Specifically, the most frequently injured body sites were the ankle (n = 324969, 22.7%), the head/face (n = 1766732, 12.3%) and the thigh/upper leg (n = 114721, 8.0%). Injuries to the lower extremities were most
We found that rates and patterns of high school sport injuries differed between practice and competition. Continuous surveillance is warranted to monitor changes in these patterns over time and to assess the effects of future interventions (eg, rule and equipment changes). Sport-specific studies identifying activities with high injury risk can help ATs and coaches develop targeted training techniques to lower injury rates. Additionally, continued research into the biomechanics of particular injuries, such as sprains/strains, concussions, and lower extremity injuries, may give researchers insights into further training or protective equipment interventions. When considering the growing population of high school athletes along with the important physical and social benefits of sport participation, reducing sport injury rates should be a priority.

ACKNOWLEDGMENTS

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REFERENCES


Julia Rechel contributed to the analysis and interpretation of the data and drafting and final approval of the article. Ellen E. Yard, MPH, contributed to acquisition of the data and drafting, critical revision, and final approval of the article. R. Dawn Comstock, PhD, contributed to conception and design, acquisition of the data, and critical revision and final approval of the article.

Address correspondence to Ellen E. Yard, MPH, Center for Injury Research and Policy, The Research Institute at Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205. Address e-mail to Ellen.Yard@NationwideChildrens.org.
Is there an association between self-reported warm-up behaviour and golf related injury in female golfers?

Andrea J. Fradkin, Peter A. Cameron, Belinda J. Gabbe*

Department of Epidemiology and Preventive Medicine, Monash University, Central and Eastern Clinical School, The Alfred Hospital, Commercial Rd, Melbourne, Vic. 3004, Australia

Received 19 December 2005; received in revised form 20 April 2006; accepted 20 April 2006

Summary Golfing injuries have been shown to occur frequently, and injury countermeasures have been suggested to help reduce injury risk. Performing an appropriate warm-up is thought to reduce injury risk, however there is a lack of evidence to support this notion. Therefore this study aimed to investigate the relationships between warm-up participation and injury in a cohort of female golfers. A total of 522 golfers participating in the Victorian Women’s Pennant Competition completed the study. Over one-third (35.2%) of the golfers reported having sustained a golfing injury within the previous 12 months, with the lower back the most commonly injured region. Most golfers reported not warming-up prior to play or practice. Golfers who reported not warming-up on a regular basis were more likely to have reported a golfing injury in the previous 12 months than those reporting frequent warm-up participation (OR=45.2; 95% CI: 13.5, 151.7). Less skilled golfers were also less likely to report sustaining a golfing injury than more skilled golfers (OR=0.2; 95% CI: 0.1, 0.5). This study is one of the few to establish an association between warm-up participation and injury. Further prospective studies are warranted to determine whether warm-up reduces injury risk for golf participation.

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Introduction

In Australia, 7.5% of the total adult population (12.4% of the male, 2.6% female) participate in golf. It is the fourth most popular physical activity participated in by Australians behind walking for exercise, aerobics, and recreational swimming (2nd most popular males, 10th most popular females).1

Injuries from sports and recreational activities are the unwanted side effects of efforts to engage the population in physical activity in its many forms. It remains difficult however, to obtain a clear picture of the nature and extent of the injury problem arising from participation in leisure time sports and/or recreational activities.2 Although golf
is considered a low-intensity sport, a considerable number of injuries are possible, the most frequently reported being soft tissue/musculoskeletal associated with overuse. It has been estimated that 57–62% of amateur golfers will sustain an injury during their playing career, compared to a lifetime injury risk of 89% for professional golfers. The lower back, wrist and shoulder are commonly injured areas. According to emergency department and sports medicine clinic presentations, golfers mostly suffer sprains and other overuse injuries. These injury types could be potentially reduced through warm-up participation.

The golf swing is a very unusual high speed motion which may place considerable stress on the body. The motion of the body generates a club head speed of 100 mph (161 km/h) in less than a fifth of a second. Amateur golfers could be more likely to copy the techniques of the champions, but to attain their skills requires extensive practice and appropriate physical conditioning. In general, weekend golfers are not as prepared to cope with the demands on their bodies as their professional counterparts and their technique is less efficient. This combination can result in golf-related injury at the amateur level, and suitable countermeasures need to be investigated to help reduce the risk of injury to golfers.

Warm-up exercises have been suggested as a measure in injury prevention. It is argued that these exercises may reduce injury rates while improving performances in sport in general. A recent systematic review found that there were very few studies investigating the effects of warming-up on injury prevention. Those that do exist showed that performing a sport-specific warm-up programme will assist in reducing injury risk, although none of these studies were performed in golfers. The performance improvement benefits for golfers of participating in a warm-up have been shown recently, however, to date, no single study has demonstrated the claims that warming-up will reduce the incidence of golf injuries. Therefore, the aim of this study was to investigate the relationship between warm-up participation and injury in a cohort of female golfers.

Materials and methods

Participants

Golfers were recruited from the Victorian Women's Pennant competition in Australia that consists of a metropolitan and country competition. The metropolitan season extends for 7 weeks from March through to May, and is comprised of 9 sections with 8 teams in each section. Each team has approximately 7 players. The country season operates at the same time with 16 districts participating. Up to 55 teams compete in the country section, with approximately 5 players per team. The composition of the pennant team varied throughout the season as golfers’ availability changed, thus, there is an approximate number of players in each team.

Procedures

The captain of each metropolitan team was sent a questionnaire for each team member mid way through the season with instructions to distribute them to all team members involved in the competition, collect them once completed, and return them prior to the completion of the season. Numerous copies of the questionnaire were also sent to the co-ordinator of the country pennant season and they were asked to distribute them to the country team captains with the same instructions as above. Informed consent was obtained from all participants and approval for this study was granted by the Monash University Standing Committee on Ethics in Research Involving Humans.

Questionnaire

The questionnaire contained items related to participation in warm-up prior to play and practice. For the purpose of this study, golf play was defined as "playing at least 9 holes on a golf course", whereas golf practice was defined as "any other form of golf (i.e. driving range, putting/chipping, etc.)".

The questionnaire collected self-report information about the following:

- Demographics (age, occupation)
- Golf History (handicap index, hours played and practised per week, years of golf participation)
- Warm-up Knowledge (where and from whom participants learn about warm-up)
- Warm-up Behaviours (participation in warm-up prior to play and practice, length of usual warm-up, a description of their usual warm-up)
- Warm-up Attitudes (participant beliefs of the benefits of warm-up)
- Injury History (previous 12 months)

Injury definition

The definition of injury for this study was chosen as it encompassed both training and actual game injuries, as well as sport related illnesses such as
sometimes warm-up prior to practice were almost three and a half times more likely to report being injured than those who often or always warmed-up, though this was not a significant independent predictor, probably due to the high correlation with warm-up prior to play. A focussed education campaign to encourage golfers to warm-up could be warranted. However, as this study was retrospective, the impact of the injury on warm-up participation behaviour could not be ascertained. To establish whether actually warming-up prior to golf participation reduces the risk of injury, a prospective study is required. The findings of the current study combined with a previous study which has shown that golfers' performances were significantly improved by undertaking a golf specific warm-up program compared to not performing the warm-up, suggest this is warranted.

Golfers with lower handicaps were more likely to report an injury than those with higher handicaps, and this was independent of their warm-up behaviour. Potentially more skilled golfers may be more at risk of injury due to increased exposure time that would be required to obtain a lower handicap. Whilst hours per week of golf play and practice (exposure time) were examined, they were not found to be significant predictors of injury. However, as this study was retrospective, it cannot be ascertained whether the golfers altered their frequency of play or practice after sustaining an injury.

There are a few limitations to this study that could limit the widespread application of these results. The primary limitation of this study is that it was retrospective and only an association between warm-up behaviours and injury could be established, not causality. Only female golfers who were registered to play in the Victorian Pennant season were studied. It is likely this group of golfers would play and practice more frequently than the average golfer, therefore, it is possible that the incidence of injury would be higher in this group. Also, all golfers involved in the pennant competition must have a registered golf handicap. Thus, it is likely that the skill level of these golfers (as measured by handicap) would be higher than the recreational golfer. As this study was restricted to females only, and it is not known whether there is a difference in injury rates between the genders and the results cannot be extrapolated to male golfers. Golfers' who warm-up regularly expend considerable time and energy to attempt to prevent injury, and as such, may be loathe to acknowledge that they suffered an injury. Furthermore, the self-reported warm-up behaviour data needs to be validated, though the findings in this study agree with those of a previously published observational study.

Conclusion

In conclusion, most golfers report that they do not warm-up prior to play/practice. This research has shown that golfers are at a significantly higher risk of reporting an injury if they do not undertake a warm-up prior to play or practice and more skilled golfers (lower handicaps) are more likely to report a golfing injury than less skilled golfers, possibly due to increased exposure. Future, prospective studies are required to determine the exact injury prevention benefits of participating in the recommended warm-up.

Practical Implications

- Golfers who report not warming-up on a regular basis are more likely to report a golfing injury in the previous 12 months than those reporting frequent warm-up participation.
- Less skilled golfers were less likely to report sustaining a golfing injury than more skilled golfers.
- Handicap and warm-up behaviour prior to play are predictors of reporting an injury in the previous 12 months.

Acknowledgements

Andrea Fradkin undertook the above work as part fulfilment of her PhD. Andrea Fradkin was supported by a National Health and Medical Research Council (NHMRC) Post-Graduate Research Scholarship whilst Belinda Gabbe was supported by a Public Health Research Fellowship from the NHMRC. The contribution of Prof. Caroline Finch in the initial development of the project methodology is gratefully acknowledged. Funding for this study was provided by Smartplay, and Vic Health Partnerships.

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Relationships between warm-up participation and golf related injury in female golfers


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