AN INVESTIGATION OF THE RELATIONSHIP BETWEEN JUNIOR GIRL’S GOLF RATINGS AND NCAA DIVISION I WOMEN’S GOLF RATINGS

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A thesis submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Exercise and Sport Science (Sport Administration).

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ABSTRACT

PATRICIA LYN EARLEY: An Investigation of the Relationship Between Junior Girl’s Golf Ratings and NCAA Division I Women’s Golf Ratings
(Under the direction of Edgar W. Shields, Jr., Ph.D.)

Coaches often depend on rating systems to determine who to recruit. But how reliable are these ratings? Do they help coaches find a player that will contribute to the team’s success? This research examined the degree of importance that should be placed on junior golf ratings and if these ratings will help college coaches predict the impact of each recruit.

The research sought to discover the relationship between 207 subjects’ junior golf ratings (Golfweek/Sagarin Junior Girls Golf Ratings) and their freshman, sophomore, junior and senior year golf ratings (NCAA Division I Women’s College Golf Ratings), rate of improvement and number of starter years using simple regression.

A significant relationship was found between junior golf ratings and the freshman, sophomore, junior and senior year NCAA Division I women’s college golf ratings. A significant relationship was found between junior golf ratings and starter years but not with the rate of improvement.
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CHAPTER I

INTRODUCTION

Recruiting is a very important factor that directly affects the success of an athletic team. Coaches recruit players that they predict will make a positive impact on their team. A team and coaches success each year is in direct correlation with the players’ achievement and contribution level. Without great recruits it is difficult for a team to be successful and compete at a desired level. Coaches have the responsibility to recruit the best players possible.

Coaches often depend on rating systems to determine who to recruit. But how reliable are these ratings? Do they help coaches find a player that will contribute to the team’s success? Do the ratings indicate a player’s chances of improving throughout their career? It would be helpful to know if junior ratings (Golfweek/Sagarin Junior Girls Golf Ratings) can accurately predict future college golf contributions by a player. This research examined the degree of importance that should be placed on junior golf ratings, and if these ratings will help college coaches predict the impact that each recruit will have on their team. By better understanding the relationships between the ratings and intercollegiate performance, valuable time and money could be saved during the recruiting process. Initially, research was guided by the stated research questions. Due to the large number of subjects and data, opportunities to “mine the data” for additional information occurred throughout the analyses. Therefore, additional results are presented and conclusions are drawn.
**Statement of Purpose**

This research sought to discover the degree of importance that should be placed on junior girls’ golf ratings so that valuable time and money can be saved during the recruiting process. NCAA Division I women’s golf coaches will be able to predict the impact that each junior player will have on their team so that overall success can be achieved.

**Research Questions**

1. Is there a relationship between junior golf ratings and freshman year NCAA Division I women’s college golf ratings?
2. Is there a relationship between junior golf ratings and sophomore year Division I women’s college golf ratings?
3. Is there a relationship between junior golf ratings and junior year NCAA Division I women’s college golf ratings?
4. Is there a relationship between junior golf ratings and senior year NCAA Division I women’s college golf ratings?
5. Is there a relationship between junior golf ratings and the rate of improvement during NCAA Division I women’s college golf?
6. Is there a relationship between junior golf ratings and the number of years as a starter in NCAA Division I college golf?

**Null Hypothesis**

Junior golf ratings will have no significant relationship with NCAA Division I women’s college golf ratings.

1. There is no significant relationship between junior golf ratings and freshman year NCAA Division I women’s college golf ratings.
2. There is no significant relationship between junior golf ratings and sophomore year Division I women’s college golf ratings.

3. There is no significant relationship between junior golf ratings and junior year NCAA Division I women’s college golf ratings.

4. There is no significant relationship between junior golf ratings and senior year NCAA Division I women’s college golf ratings.

5. There is no significant relationship between junior golf ratings and the rate of improvement during NCAA Division I women’s college golf.

6. There is no significant relationship between junior ratings and the number of years as a starter in NCAA Division I college golf.

**Research Hypothesis**

There will be a positive correlation between junior golf ratings and NCAA Division I women’s college golf ratings.

1. Junior golf ratings will have a positive correlation with freshman year NCAA Division I women’s college golf ratings.

2. Junior golf ratings will have a positive correlation with sophomore year NCAA Division I women’s college golf ratings.

3. Junior golf ratings will have a positive correlation with junior year NCAA Division I women’s college golf ratings.

4. Junior golf ratings will have a positive correlation with senior year NCAA Division I women’s college golf ratings.

5. Junior golf ratings will have a positive correlation with the rate of improvement during NCAA Division I women’s college golf.
6. Junior golf ratings will have a positive correlation with the number of years as a starter in NCAA Division I college golf.

Assumptions

It is assumed that all tournament information has been accurately accounted for by the Golfweek/Sagarin Junior Girls Golf Ratings and the Golfweek/Sagrin Women’s Collegiate Individual Ratings.

Four years of subjects resulting in a sample group of 207 subjects is adequate for this research.

Limitations

1. The formula for the Sagarin power rating is not known. This lack of knowledge could be a limitation, but the Sagarin ratings for sports are considered valuable and reliable within the sports industry.

2. Junior ratings for 2003-2004 were not available for this research. Golfweek did not have the ratings archived. Therefore the 2003-2004 junior subjects were not followed throughout their four years of college golf.

3. No other junior rating systems were considered due to availability and reliability of the data. In order for the junior ratings and college ratings to be compared equally, different college rating systems were not considered for analysis.

Delimitations

1. The Golfweek/Sagarin Rating System is the only rating system used for junior golf and college golf comparisons in this research.

2. This study did not consider junior ratings prior to 2000-2001 and junior ratings after 2004-2005.
3. The 2004-2005 class was the last class studied in order to ensure completion of four years of college golf for all the subjects.

4. The subjects that did not complete four consecutive years at the NCAA Division I level were eliminated from the sample.

5. Research only included junior golfers, American and International, which competed in the United States on a regular or semi-regular basis and had an established junior rating.

6. International junior ratings were not be used for comparison.

**Definition of Terms**

1. **Golfweek/Sagarin Junior Girls Golf Ratings** - Jeff Sagarin’s rating system is based on a mathematical formula that uses a player’s won-lost-tied record against other players when they play on the same course on the same day, and the stroke differential between those players, then links all players to one another based on common opponents. The ratings give an indication of who is playing well over the past 52 weeks (Golfweek/Sagarin Rankings Explanation, 2010). Each year the ratings begin on September 1 and end on August 31. The mathematical formula produces a power rating which could be compared to a handicap system. The junior ratings are compared by looking at the difference between the power ratings (L. Ringler, personal communication, May 25, 2010).

2. **Golfweek/Sagarin Women’s Collegiate Individual Golf Ratings** - Jeff Sagarin’s rating system is based on a mathematical formula that uses a player’s won-lost-tied record against other players when they play on the same course on the same day, and the stroke differential between those players, then links all players to one another based
on common opponents (Golfweek/Sagarin Rankings Explanation, 2010). The ratings give an indication of who is playing well over the past collegiate golf season. Each year the ratings begin at the beginning of the college golf season and end after the completion of the National Championship. The mathematical formula produces a power rating which could be compared to a handicap system. The college ratings are compared by looking at the difference between the power ratings (L. Ringler, personal communication, May 25, 2010).

3. National Collegiate Athletic Association (NCAA)- A voluntary organization through which the majority of the nation's colleges and universities govern their athletics programs. Membership is comprised of institutions, conferences, organizations and individuals committed to the best interests, education and athletics participation of student-athletes. The purpose is to govern competition in a fair, safe, equitable and sportsmanlike manner, and to integrate intercollegiate athletics into higher education so that the educational experience of the student-athlete is paramount. The active member schools self-determine which of three divisions, Division I, II or III, they will be classified in and must annually meet membership criteria for that division (Who we are, 2011).

4. Division I- Division I member institutions have to sponsor at least seven sports for men and seven for women (or six for men and eight for women) with two team sports for each gender. Each playing season has to be represented by each gender as well. There are contest and participant minimums for each sport, as well as scheduling criteria. For sports other than football and basketball, Division I schools must play 100 percent of the minimum number of contests against Division I opponents – anything over the minimum number of games has to
be 50 percent Division I. Division I schools must meet minimum financial aid awards for their athletics program, and there are maximum financial aid awards for each sport that a Division I school cannot exceed (Differences among the three divisions, 2011).

**Operational Definitions**

1. **Junior golf rating**-
The Golfweek/Sagarin girls junior golf rating is referred to as the junior golf rating. The power rating from the junior golf ratings is being compared amongst the junior girls. The golf rating used for the junior girls is from their 3rd year of high school. The 3rd year, otherwise known as junior year of high school, is the most important rating to use in this research because this is the time period in which recruits and coaches make their recruiting decisions.

2. **College golf rating**-
The Golfweek/Sagarin women’s collegiate individual golf rating is referred to as the college golf rating. The power rating from the college golf rating is being compared amongst the college women.

3. **Starter**-
A starter played in a minimum number of tournaments that corresponding season. Each year’s archived *Golfweek* rankings had an established minimum number of tournaments that determined if a subject was a starter.

4. **Non-starter**-
A non-starter played in less than the minimum number of tournaments needed for starter status. Each year’s archived Golfweek rankings had an established range of tournaments that determined non-starter status.
5. **National Collegiate Athletic Association**

The National Collegiate Athletic Association is referred to as the NCAA.

**Significance of the Study**

“In theory, the better the recruiting class, the better the subsequent years’ performance outcome will be” (Herda, 2009, p. 1). This study is significant to the intercollegiate women’s golf industry as “a team needs a high level of talent in order to be successful” (Packer & Lazenby, 1999, p. 32). Recruiting and signing players that will be more successful and will outperform their competition is the goal during the recruiting process. If college coaches are able to trust and secure a recruiting tool that improves their recruiting process, then time, money and resources can be saved in the management of their program.

NCAA Division I athletic departments strive to be competitive at all of the sports that they sponsor. Women’s golf programs are considered a non-revenue sport because they are not profitable to the university. Nonetheless, universities, athletic departments and fans evaluate women’s golf programs similarly to revenue sport programs in such a way that high expectations to win and be successful are paramount. Ultimately, it is a golf coach’s responsibility to build a program that is successful. In order to build a successful program, a coach must recruit players that will succeed at the Division I level. A successful coach can be defined in many different ways and can be rewarded in as many ways. Success can be seen as respect throughout the athletic department and university resulting in multi-year contracts, salary increases, budget increases, bonuses, awards and recognition and new facilities. Success through the eyes of the fans and coaching peers is seen by the giving of awards, honors and speaking engagements. This earned success comes from numerous factors
including the recruitment of players that will help your program win the most and succeed. A better understanding of the relationship between junior girls’ golf ratings and intercollegiate golf performance will help save coaches valuable time, resources and money during the recruiting process while increasing the likelihood of a successful coaching career.

A twenty-four hour day is sometimes not long enough for coaches to get everything accomplished. Unlike other sports, golf is allowed a maximum of two coaches and most budgets are not large enough for the employment of non-coaching staff members. Most college golf teams have seven to twelve student-athletes on their roster. All responsibilities are held by this small coaching staff. Thus, time is an important factor and must be managed well. If the significance of the junior girls’ ratings was better understood then a coach could save valuable time spent on recruiting in many different ways. The three parts of recruiting that require the most amount of time are: (a) recruiting off campus, (b) recruiting on campus and (c) in office recruiting.

Recruiting off campus involves attending junior golf tournaments located throughout the country and these events can last two to four days per tournament. Coaches evaluate recruits at tournaments by following one group of three to four players which usually consists of just one or two recruits of interest. Since a round of golf typically takes approximately four to five hours to complete, the coach often evaluates for longer periods of time. Competitive golf is a slower paced sport, only fifteen to twenty shots are observed per recruit per hour. Evaluations in other sports can be completed in one to two hours, many more skills can be observed during the shorter time and a higher number of recruits can be evaluated simultaneously. Using the ratings to better identify which players should be evaluated at tournaments would help save time while on the road recruiting.
A coach usually spends the day planning and conducting practice and completing administrative duties. Coaches spend time with recruits outside of practice so they can talk one on one with the recruit about the university and golf program. The length of a visit can vary from thirty minutes to multi-day visits. The time spent on entertaining recruits adds up quickly and it is not uncommon for visits to fill up the majority of the day especially during the busy recruiting months. When there are not scheduled recruit visits the coach spends that time taking care of day to day administrative duties which include booking team travel, scheduling, budgeting, fundraising, completing compliance paperwork, planning practice, and monitoring academic progress. It would be very valuable to a coach to have a better understanding of the ratings so that an appropriate amount of time is budgeted and spent with each recruit on-campus.

Much recruiting takes place in the office without face-to-face contact. This type of recruiting involves corresponding with the prospects, parents and swing instructors. Most junior players have a relationship with their swing instructor and this person knows the junior player’s swing the best. Phone calls are made to swing instructors to learn more about the prospects’ performance and techniques. Recruiting time is also spent gathering information through recruiting software and internet sites. Being able to target recruits through junior ratings that have the potential of contributing to the team’s success enables the coach to save time during in office recruiting.

Research results that help predict the impact that a player will have on a team can help the college coach be more honest and straightforward with a recruit’s potential to succeed at the intercollegiate level. A coach can communicate with the junior player more confidently when explaining the likelihood of playing time throughout her career or the
likelihood of becoming a strong recruit for that program. Honesty and straightforwardness from the beginning of the recruiting process helps to promote a better experience for the coaching staff, the player and their family. In addition, this transparency ultimately gives the coach more time to focus on moving the team towards the next winning season.

“With limited resources available to help athletes develop, effective talent identification and development processes are of paramount importance to minimize costly mistakes through dropout or failure to achieve” (Abbott & Collins, 2004, p. 395). Cost-saving measures are increasingly important in difficult economic times, particularly for non-revenue sports. Presently, programs are not receiving increases to their operating and recruiting budgets but are experiencing budget cuts instead. Having a better understanding of the junior girls’ ratings could save golf programs money by reducing the number of recruiting trips and the duration of each visit. With more knowledge of the potential of the recruit to succeed, college coaches can plan their travel expenses with more efficiency. The costs incurred by traveling to each tournament can be possibly lessened and the recruiting budget would have a greater chance of being manageable during this recessionary cycle.

Most coaches would agree that their team’s overall success has resulted from their successful recruiting effort. For teams to win they need great players that achieve and succeed at the highest level. In a study performed by Langelett (2003),

The results find both that recruiting significantly affects team performance and team performance significantly contributing to recruiting results. This reinforcing cycle may explain why certain teams are able to continuously be top-25 teams and other teams are never able to rise substantially in their competitiveness (p. 240).

These recruits are the players that the most successful coaches get the opportunity to coach and win with.
CHAPTER II
REVIEW OF LITERATURE

The purpose of this literature review was to discover which areas involving ratings predicting future success has already been thoroughly researched and which areas need more attention.

A study looked at the relationship between college football recruiting and team performance through regression analysis. A model was designed to look at a team’s performance over the duration of five years to see if recruiting drives team performance but also accommodating for the possibility of recruiting being affected by prior team performance. Team performance ratings from the 1991-2001 USA Today and Associate Press top 25 polls and recruit ratings from two sports analysts were used for analysis. According to Langelett (2003),

Evidence suggesting that recruiting does indeed affect team performance over the next five years may explain why schools are willing to spend large amounts of money on recruiting in college football. Team performance affecting subsequent recruiting classes suggests that teams finishing in the top 25 in January tend to be rewarded in their recruiting (p. 244).

Even though this study focused on football, it would be appropriate to generalize that the results can be applied to other Division I sports also. Successful recruiting classes can positively affect team’s success which then affects the subsequent years recruiting classes. Ultimately, all people associated with the program wins. But how reliable are the recruiting services that produce the recruiting ratings that we rely on. Relationships between NCAA
Division I football team recruiting ratings and the Jeff Sagarin end-of-season team’s ratings were investigated from 2002-2006. A comprehensive study of 100 football teams was conducted. The study compared the two recruiting services, Rivals and Scouts, to the Jeff Sagarin performance ratings. Results found that recruiting is an important factor in a team’s success that predicted up to 45% of the variance in end-of-season ratings and total wins. Other factors must be contributing to the end-of-season ratings and accounting for the team’s annual success. Furthermore, the abilities of NCAA college football programs to develop a broad range of young players physically, emotionally, and academically are generally unaccounted for by recruiting services. “Thus, overall, there may be many factors besides recruiting ratings that distinguish among the successes of NCAA Division I football teams judged by end-of-season ratings and the total number of team wins” (Herda, 2009, p. 7). In addition, up to 51% of the variance in the recruiting ratings was predicted by end-of-season ratings or total wins from the previous season, which may indicate that more successful seasons yield better subsequent recruiting classes.

Both football studies, ranging from small to large in scope, resulted in the conclusion that, “Schools with success on the field are able to attract quality recruits, which in turn increases the quality of future performance (Langelett, 2003, p. 244).”

In tennis it is common for the best junior players to skip the collegiate or amateur level and turn professional earlier in their career. A study was conducted to look at the relationship between junior boys’ tennis success and rating accomplishment in professional men’s tennis. The junior rating was measured by a top 20 International Tennis Federations’ Junior Circuit (ITFJC) rating. Results found that 91% of top 20 ranked boys achieved a professional men’s ranking. A stepwise regression analysis found junior ranking to be a

This scope of the study was limited since it focused on the very best junior boys within the ITFJC. The study did not predict the long term success of the ranked juniors in the ITFJC, it did not make predictions for the best junior girls, and it did not draw any conclusions about tennis at the collegiate level. This study was very limited since it only focused on the very best junior boys that had achieved a top 20 ITFJC ranking. It does compare two levels of play to one another, junior level and professional level.

The next tennis study focused on multiple variables besides ratings that influence and predict elite tennis success. It examines the day to day variables in a tennis player’s life that shapes and directly influences their future tennis ranking.

In Sweden, an analysis of 5 elite male and 5 elite female tennis players was conducted to see if backgrounds and development influenced the shaping of elite tennis players. Ratings were only used to separate the tennis players into the two test groups, elite and control. The study looked at early life sports experiences, social structures, relationship to coaches, background, local club environment for the player, and player’s parents and coaches. “This study reveals that it is not possible to fully predict who will develop into a super tennis player based on talent alone (Carlson, 1988, p. 241).” Talent alone was not enough to achieve elite status. Such factors as participation in other sports, equal or greater success in other sports, success after puberty, good personal relationships with a coach, and self-confidence were all common factors of the most successful elite tennis players.
Tennis rating systems can rank the players on head to head competition and by common opponents because it is an individual sport. But how is talent determined for players that compete in team sports such as soccer? And then how can that talent predict future success?

Currently, “Potential future professional players are selected mainly based on the subjective judgment of coaches and scouts. More objective and evidence-based criteria are rare (Tschopp, Biedert, Seiler, Hasler, & Marti, 2004, p. 563).” A four year multidisciplinary trial was conducted to predict success in Swiss junior elite soccer players. Fifty four members of three Swiss national soccer teams were studied using sixty two variables. The aim was to evaluate the predictive value of physiological, medical, psychological, anthropometric, social and personal characteristics for medium-term success. Height, isokinetic strength of the knee flexors, and age at entry into club soccer were consistently important predictors of talent. Age 15 was found to be the best age for future assessment.

Effective selection and support of talented junior soccer players is still a challenge for professional soccer clubs and national associations. After analysis, it is difficult to prove that coaches and scouts should not be subjectively judging potential future professional players.

After reviewing the literature it is confirmed that the volume of research that has been conducted involving the relationship between ratings and future success is limited. “Limited data exist to objectively link ranking achievement in the junior game to later, professional success” (Reid et al., 2007, p. 668). Very little research has been done on the amateur, college or professional level to understand how ratings impact the team’s recruiting decisions, time and money spent on recruiting and the overall success by the team and coach. Each study was very limited in its focus and findings. The various studies focused solely on
males, a limited number of athletes, non-rating criteria, the direct effect on a team, or the evaluation of a sport that is difficult to rate. In summary, understanding how ratings can be used effectively to ensure the team’s yearly success is an area that has not been fully researched.
CHAPTER III

METHODOLOGY

Subjects


Each year had a different number of subjects that obtained power ratings for four continuous years of college golf. The 2000-2001 class has 31 subjects. The 2001-2002 class has 65 subjects. The 2002-2003 class has 55 subjects. The 2004-2005 class has 55 subjects. The total number of subjects is 207.


Confidentiality of players’ ratings is not an issue since all data is available to the public.

Data Collection


The 31 subjects from the junior class of 2000-2001, 65 subjects from the junior class of 2001-2002, 55 subjects from the junior class of 2002-2003 and the 55 subjects from the junior class of 2004-2005 were grouped together so that 207 subjects were analyzed for each research question.

To investigate the relationship between the junior rating and the year-by-year college rating, only the subjects that obtained a power rating were used for analysis. Power ratings are assigned to all players that competed in at least one competitive tournament. To be a subject in this study, the player had to have a power rating for four consecutive years. Missed years of competition and breaks in competition eliminated the subject from analyses. Using only the subjects that played four continuous years of collegiate golf ensured that the correct junior rating was being used for that subject.

To investigate the relationship between the junior rating and the number of starter years, all subjects’ starter status was gathered from the archived Golfweek/Sagarin Women’s Collegiate Individual Ratings. The researcher deemed a player a ‘starter’ if they competed in
a minimum number of tournaments throughout the competitive golf season. Starter status was indicated in each of the collected archived Golfweek/Sagarin Women’s Collegiate Individual Ratings by the lack of an asterisk next to their ranking. A subject was deemed a ‘non-starter’ if they competed in less than the minimum number of tournaments throughout the competitive golf season. The minimum number of tournaments was determined by Sagarin. All non-starters were labeled with an asterisk next to their ranking. Values of 0, 1, 2, 3 or 4 were assigned to each subject based on their number of starter years. A subject’s starter status was relevant only for research question 5. For research questions 1 through 4, starter status did not influence the power ratings that were used for analysis.

To investigate the relationship between the junior rating and rate of improvement, the senior year’s rating was subtracted from the freshman year’s rating. A positive number indicated that the power rating lowered from the freshman year to the senior year. A negative number indicated that the power rating increased from the freshman year to the senior year. The subjects’ sophomore and junior year’s power ratings did not contribute to the investigation of this relationship between the junior rating and the rate of improvement.

**Statistical Analysis**

Simple Regression with a .05 significance level was used for statistical analysis of the junior and collegiate ratings. Output of R Values, R Squares, and P Values provided the researcher with the results for the research questions. The initial analyses were guided by the initial research questions. Additional analyses were guided by the opportunity to explore additional conclusions from the data.
The junior rating was the predictor variable. The junior rating was used to predict the freshman, sophomore, junior and senior ratings, predict the rate of improvement and to predict the number of years as a starter.

Research question 1 through 4 used each subject’s power rating regardless of the number of tournaments that were played by the subject. All 207 subjects’ freshman power ratings were used to answer research question #1. All 207 subjects’ sophomore power ratings were used to answer research question #2. All 207 subjects’ junior power ratings were used to answer research question #3. All 207 subjects’ senior power ratings were used to answer research question #4. All 207 subjects’ rates of improvement were used to answer research question #5. All 207 subjects’ starter year values were used to answer research question #6.

Opportunities to explore for other relationships led to the analysis of the subjects broken down into smaller groups. Groups with rankings of 1-50, 51-100, 101-150, and 150 and higher were used to explore for additional relationships between the junior ratings and the collegiate ratings.

In addition to the previously described regression output, means for the junior subjects’ and collegiate subjects’ ratings provided the researcher an opportunity to calculate the rating difference between junior golf and collegiate golf. The tables and figures in the following chapter display the results, findings and relationships.
CHAPTER IV

RESULTS

A significant relationship was found between junior golf ratings and the freshman, sophomore, junior and senior year NCAA Division I women’s college golf ratings. The relationship between junior golf ratings and starter years in NCAA Division I women’s college golf ratings was significant but the amount of improvement was not found to be significant.
RQ 1

A significant relationship was found between junior golf ratings and the freshman year NCAA Division I women’s college golf ratings. The null hypothesis was false. Junior golf ratings explain 46.1% of the relationship with freshman year NCAA Division I women’s college golf ratings (refer to Figure 4.1).

Figure 4.1. Scatterplot of Junior Rating and NCAA Freshman Year Rating
RQ 2

A significant relationship was found between junior golf ratings and the sophomore year NCAA Division I women’s college golf ratings. The null hypothesis was false. Junior golf ratings explain 44.2% of the relationship with sophomore year NCAA Division I women’s college golf ratings (refer to Figure 4.2).

Figure 4.2. Scatterplot of Junior Rating and NCAA Sophomore Year Rating
RQ 3

A significant relationship was found between junior golf ratings and the junior year NCAA Division I women’s college golf ratings. The null hypothesis was false. Junior golf ratings explain 37.7% of the relationship with junior year NCAA Division I women’s college golf ratings (refer to Figure 4.3).

Figure 4.3. Scatterplot of Junior Rating and NCAA Junior Year Rating
RQ 4

A significant relationship was found between junior golf ratings and the senior year NCAA Division I women’s college golf ratings. The null hypothesis was false. Junior golf ratings explained 38.2% of the relationship with senior year NCAA Division I women’s college golf ratings (refer to Figure 4.4).

Figure 4.4. Scatterplot of Junior Rating and NCAA Senior Year Rating
RQ 5

No significant relationship was found between junior golf ratings and the rate of improvement during NCAA Division I women’s college golf. The null hypothesis was proven true.

RQ 6

A significant relationship was found between junior golf ratings and the number of years as a starter in NCAA Division I women’s college golf. The null hypothesis was proven false. Junior golf ratings explain 7.4% of the relationship with the number of years as a starter in NCAA Division I women’s college golf (refer to Table 4.1).

Table 4.1
*R Values, R Square Values, # of Subjects and P Values for all Subjects (N = 207)*

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<th></th>
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<th>Sophomore</th>
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<td>207</td>
<td>207</td>
<td>207</td>
<td>207</td>
</tr>
<tr>
<td>P Value</td>
<td>0.000*</td>
<td>0.000*</td>
<td>0.000*</td>
<td>0.000*</td>
<td>0.443</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Note: An asterisk (*) represents a statistically significant finding (*p* ≤ 0.05)

In addition to analyzing the subjects as one group of 207 subjects, the subjects were separated into groups based on their ranking. All subjects that had a top 50 ranking were analyzed as well as the groups with a ranking of 51-100, 101-150, and ranking 150 and higher (refer to Tables 4.2, 4.3, 4.4, 4.5, 4.6, and 4.7). Within each group, the relationship between the junior rating and collegiate performance was analyzed. Junior rankings of 1-50 had significant results for all four years of collegiate golf. For instance, junior ratings of the group ranked 1-50 explained 22.6% of the relationship with freshman collegiate ratings. The
next highest correlation from the group of juniors ranked 1-50 is 21.5% with the junior collegiate ratings. No relationship was found for the junior rankings of 51-100. Junior rankings of 101-150 had significant results for the freshman and sophomore years of collegiate golf. Junior rankings of 151 and above had significant results for all four years of collegiate golf. No relationship was found between the groups of junior ratings and rate of improvement. Also, no relationship was found between the groups of junior ratings and the number of starter years.

Table 4.2

<table>
<thead>
<tr>
<th>Jr. Ranking</th>
<th>R Value</th>
<th>R Square</th>
<th>N</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>0.476</td>
<td>0.226</td>
<td>43</td>
<td>0.001*</td>
</tr>
<tr>
<td>51-100</td>
<td>0.153</td>
<td>0.023</td>
<td>55</td>
<td>0.265</td>
</tr>
<tr>
<td>101-150</td>
<td>0.379</td>
<td>0.143</td>
<td>58</td>
<td>0.003*</td>
</tr>
<tr>
<td>150 &amp; Higher</td>
<td>0.379</td>
<td>0.144</td>
<td>51</td>
<td>0.006*</td>
</tr>
</tbody>
</table>

Note: An asterisk (*) represents a statistically significant finding ($p \leq 0.05$)

Table 4.3

<table>
<thead>
<tr>
<th>Jr. Ranking</th>
<th>R Value</th>
<th>R Square</th>
<th>N</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>0.410</td>
<td>0.168</td>
<td>43</td>
<td>0.006*</td>
</tr>
<tr>
<td>51-100</td>
<td>0.123</td>
<td>0.015</td>
<td>55</td>
<td>0.372</td>
</tr>
<tr>
<td>101-150</td>
<td>0.281</td>
<td>0.079</td>
<td>58</td>
<td>0.033*</td>
</tr>
<tr>
<td>150 &amp; Higher</td>
<td>0.410</td>
<td>0.168</td>
<td>51</td>
<td>0.003*</td>
</tr>
</tbody>
</table>

Note: An asterisk (*) represents a statistically significant finding ($p \leq 0.05$)
Table 4.4
*Junior Correlation with Ranked Junior Groups*

<table>
<thead>
<tr>
<th>Jr. Ranking</th>
<th>1-50</th>
<th>51-100</th>
<th>101-150</th>
<th>150 &amp; Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R Value</strong></td>
<td>0.463</td>
<td>0.165</td>
<td>0.104</td>
<td>0.478</td>
</tr>
<tr>
<td><strong>R Square</strong></td>
<td>0.215</td>
<td>0.027</td>
<td>0.011</td>
<td>0.229</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>43</td>
<td>55</td>
<td>58</td>
<td>51</td>
</tr>
<tr>
<td><strong>P Values</strong></td>
<td>0.002*</td>
<td>0.230</td>
<td>0.439</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

*Note: An asterisk (*) represents a statistically significant finding (p ≤ 0.05)*

Table 4.5
*Senior Correlation with Ranked Junior Groups*

<table>
<thead>
<tr>
<th>Jr. Ranking</th>
<th>1-50</th>
<th>51-100</th>
<th>101-150</th>
<th>150 &amp; Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R Value</strong></td>
<td>0.407</td>
<td>0.134</td>
<td>0.140</td>
<td>0.557</td>
</tr>
<tr>
<td><strong>R Square</strong></td>
<td>0.165</td>
<td>0.018</td>
<td>0.020</td>
<td>0.310</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>43</td>
<td>55</td>
<td>58</td>
<td>51</td>
</tr>
<tr>
<td><strong>P Values</strong></td>
<td>0.007*</td>
<td>0.330</td>
<td>0.293</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

*Note: An asterisk (*) represents a statistically significant finding (p ≤ 0.05)*

Table 4.6
*Starter Years Correlation with Ranked Junior Groups*

<table>
<thead>
<tr>
<th>Jr. Ranking</th>
<th>1-50</th>
<th>51-100</th>
<th>101-150</th>
<th>150 &amp; Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R Value</strong></td>
<td>0.221</td>
<td>0.074</td>
<td>0.044</td>
<td>0.105</td>
</tr>
<tr>
<td><strong>R Square</strong></td>
<td>0.049</td>
<td>0.006</td>
<td>0.002</td>
<td>0.011</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>43</td>
<td>55</td>
<td>58</td>
<td>51</td>
</tr>
<tr>
<td><strong>P Values</strong></td>
<td>0.155</td>
<td>0.590</td>
<td>0.741</td>
<td>0.465</td>
</tr>
</tbody>
</table>

*Note: An asterisk (*) represents a statistically significant finding (p ≤ 0.05)*

Table 4.7
*Improvement Correlation with Ranked Junior Groups*

<table>
<thead>
<tr>
<th>Jr. Ranking</th>
<th>1-50</th>
<th>51-100</th>
<th>101-150</th>
<th>150 &amp; Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R Value</strong></td>
<td>0.060</td>
<td>0.026</td>
<td>0.225</td>
<td>0.212</td>
</tr>
<tr>
<td><strong>R Square</strong></td>
<td>0.004</td>
<td>0.001</td>
<td>0.051</td>
<td>0.045</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>43</td>
<td>55</td>
<td>58</td>
<td>51</td>
</tr>
<tr>
<td><strong>P Values</strong></td>
<td>0.703</td>
<td>0.849</td>
<td>0.089</td>
<td>0.135</td>
</tr>
</tbody>
</table>

*Note: An asterisk (*) represents a statistically significant finding (p ≤ 0.05)*
By analyzing the rating means an additional discovery with the data was found. The differences between the junior rating means and the collegiate rating means were calculated. On average, ratings for junior subjects ranked 1-50 increased all four years of college resulting in a 0.44 stroke increase. The highest increase occurred during the subject’s freshman year of college resulting in a 0.93 rating increase followed by a 0.46 rating increase during the sophomore year. With each year the rating decreased resulting in a negligible amount of increase during the subject’s senior year (0.02 stroke increase). Subjects with a ranking of 51-100 saw an average decrease of 0.63 strokes. With the exception of the subject’s freshman year stroke increase of 0.06, the subject’s rating decreased by 0.81 their sophomore year, 0.94 their junior year, and 0.84 their senior year. Subjects with a ranking of 101-150 saw an average improvement of 1.19 strokes. The biggest rating improvement for these subjects came from their junior year in which their rating improved by 1.71 strokes. The subjects with a ranking of 150 and higher had the largest average rating improvement of 2.36. Specifically, the subject’s junior year had a rating improvement of 3.43 strokes (refer to Table 4.8).

<table>
<thead>
<tr>
<th>Table 4.8</th>
<th>Change in Stroke Average between Junior Ratings and College Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freshman</td>
</tr>
<tr>
<td><strong>Jr. Rating 1-50</strong></td>
<td></td>
</tr>
<tr>
<td>-0.93</td>
<td>-0.46</td>
</tr>
<tr>
<td><strong>Jr. Rating 51-100</strong></td>
<td></td>
</tr>
<tr>
<td>-0.06</td>
<td>0.81</td>
</tr>
<tr>
<td><strong>Jr. Rating 101-150</strong></td>
<td></td>
</tr>
<tr>
<td>0.36</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Jr. Rating 150 &amp; Higher</strong></td>
<td></td>
</tr>
<tr>
<td>1.67</td>
<td>2.64</td>
</tr>
</tbody>
</table>

*Note*: A positive number indicates that the rating improved; a negative number indicates that the rating worsened
CHAPTER V
DISCUSSION

Significant results for research questions 1 through 4 indicate that relationships exist between players’ junior golf ratings and players’ freshman, sophomore, junior and senior year collegiate golf ratings. The freshman year and sophomore year collegiate golf ratings have the strongest correlation with the junior golf ratings. 46.1% of the freshman and 44.2% of the sophomore year college golf rating variance is explained by the junior golf rating. This dropped to 37.7% and 38.2% for the junior and senior year collegiate golf ratings. Over 50% of the variance is not accounted for. That is, a player’s freshman and sophomore year golf rating can be better predicted than the junior and senior year golf rating. A shorter amount of time has lapsed between the junior rating and the freshman year rating resulting in less time for external factors to affect the ratings. The amount of time between the junior rating and ratings later in college allow for more factors to affect the ratings. Emotional, physical, psychological and environmental factors such as maturation, independence, swing changes, changes in swing instructors, coaching changes, demands of college classes, stress of graduating and entering the “real world” and much more can directly affect college ratings. These factors can cause the strength of the correlation to decrease over time.

Significant results for research question 6 indicate that a relationship does exist between players’ junior golf ratings and the number of years as a starter. That is, a junior golf rating can help predict the number of years a player will be a starter. Even though the results were statistically significant, only 7.4% of the variance was explained by the
relationship between junior golf ratings and the number of years a player will be a starter. These results show that the strength of the relationship is weak and coaches would not rely on junior ratings to predict the number of years the recruit will be a starter because too many other variables are affecting the relationship.

Non-significant results for research question 5 indicate that a relationship does not exist between the players’ junior golf ratings and the rate of improvement. That is, junior ratings do not predict whether or not a college player will improve between their freshman and senior year.

The first research question’s hypothesis was proven true but further exploration of the freshman year subjects separated into ranked groups of 50 shows that one of the strongest correlations (22.6%) comes from the subjects ranked 1-50. The analysis of the college freshman separated by rankings and analyzed helps to confirm the accuracy of research question one’s results because three of the four ranked groups resulted in significant results. Significant results for the subjects ranked 151 and above show that a correlation exists with each collegiate year rating. The average correlation is similar to the ranked group 1-50.

Inconsistent significance testing resulted from the analysis of the subjects ranked 51-100 and 101-150. The majority of the analyses resulted in no correlation. A couple of the analyses resulted in a very small correlation, but a coach would not base recruiting decisions on such a low correlation.

Non-significant results for improvement and starter years when the subjects are divided into ranked groups of 50 verified that a specific junior rating does not predict the impact that the subject may have on a team.
Analyzing the difference in stroke average between the junior subjects and collegiate players was not initially a goal of this research. However, after the data was sorted and analyzed, interesting patterns were found. If a subject was ranked in the top 50 of their class as a junior player, then their freshman, sophomore, junior and senior college rating were higher than their junior rating. The biggest change in the rating for the top ranked 50 was the first year of college. This finding is justified by the quick period of transition that top freshman must go through from junior golf to collegiate golf. Usually top junior recruits are immediately in the team’s line up and are expected to contribute. They have less time to adjust and transition to a new level of competition. Reasons for an increase in a top freshman’s stroke average are plentiful but can be attributed to adjusting to being away from home, adjusting to a team environment, the additional pressure of representing a university and competing in tournaments at a different time of year when the weather and course conditions are often less than favorable. It is encouraging to see that the subjects with a ranking of 51 and higher lowered their rating throughout college. Subjects that begin with a higher rating have more room to lower their ratings over time. That is, a subject with a rating of 82.0 has more room for improvement and should have a better opportunity to lower their rating compared to a subject with a rating of 73.5.

The purpose of the study was to discover the importance that should be placed on junior girl’s golf ratings so that valuable time and money can be saved during the recruiting process. The intent was also to be able to predict the impact that each junior player will have on their team. Since the relationship with amount of improvement was not significant and the variance explained with starter years was very low, the lack of helpful information that can be gathered from research questions #5 and #6 does not help golf coaches predict the impact
of junior players on their teams. Results from research questions #1 through #4 revealed that college golf ratings are related to junior golf ratings. A level of importance can be placed on the validity of junior golf ratings. A golf coach can predict a college golf rating from the junior golf rating. By predicting college golf ratings, college coaches can take that information and use it to see how junior players would fit into the team’s line up.

In conclusion, junior girls’ golf ratings only account for 37-42% of the predictability of college success. A recruiter should weigh no more than 42% of their decision on the junior golf ratings and should consider many other factors that can influence future golf ratings. College ratings can be predicted from the junior golf ratings but it is not an extremely accurate way of determining a player’s future contribution to the team. Though, college players’ ratings can be better predicted than the number of starter years and the amount of improvement for that college player. It is unlikely the results will influence coaches’ decisions on which recruiting tournaments to attend, the length of the recruiting trip, and the way in which unofficial visits are conducted on campus. Consequently, the results will not change the economics of recruiting. A considerable amount of money will continue to be spent on the recruitment of new players since college players’ ratings are influenced by more than just their junior rating.
REFERENCES


