Effects of Winning Percentage on Men’s Collegiate Basketball After Investments in Facilities

Matthew D. Frank
Purdue University, frank12@purdue.edu

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Effects of Winning Percentage on Men’s Collegiate Basketball After Investments in Facilities

by

Matthew D. Frank

A Directed Project
Submitted to the Faculty of Purdue University
In Partial Fulfillment of the Requirements for the degree of

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THE PURDUE UNIVERSITY GRADUATE SCHOOL
STATEMENT OF TYPE YOUR DIRECTED PROJECT TYPE
APPROVAL

Professor Daniel Lybrook, Chair
   Click here to enter text.

Dr. Jamie Mohler
   Click here to enter text.

Dr. Andrew Hurt
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Approved by:
I would like to dedicate this research to my late Grandmother, Lela Jahn. You taught me from the earliest of ages to push your ideas and to never settle for anything except the best. Your early and consistent push for knowledge and wanderlust has lead me to where I am today. –Thank You
ACKNOWLEDGMENTS

To my committee for working alongside of me throughout my degree process and their constant help.
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DEFINITIONS

AAU- The AAU was founded in 1888 to establish standards and uniformity in amateur sport. During its early years the AAU served as a leader in international sport representing the U.S. in the international sports federations. The AAU worked closely with the Olympic movement to prepare athletes for the Olympic games. After the Amateur Sports Act of 1978, the AAU has focused its efforts into providing sports programs for all participants of all ages beginning at the grass roots level. The philosophy of "Sports for All, Forever," is shared by over 500,000 participants and over 50,000 volunteers. The AAU is divided into 56 distinct Districts. These Districts annually sanction more than 34 sports programs, 250 national championships, and over 30,000 age division events (About AAU, 2017).

NCAA- The National Collegiate Associations is the governing body for all collegiate athletics within the United States.

Power 5- A group of 5 athletic conferences (ACC, BIG 10, BIG 12, PAC 12, and SEC). Often seen as the premier conferences with the most money and winning traditions.
ABSTRACT

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Major Professor: Daniel Lybrook

Throughout studying the impacts of investments on facilities and its potential impacts on Men’s Basketball overall success within the conferences we were able to find some indicators that would suggest the financial investments do have an impact but we would need to study more teams to see a possible statistical significance. Although statistical significance was not found within the current study (.13 was found with an alpha set at .10) my suggestion and observations throughout this study show that facilities play a major role in the overall success of a program and spending will continue to take place as the “arms race” continues to take place.
SECTION 1. INTRODUCTION

Starting within the last 30 years collegiate athletics have engaged in a nuclear proliferation of facilities that have become necessary to be competitive in the world of collegiate athletics. The National Collegiate Athletic Association (NCAA) is the governing body that oversees all certified collegiate athletics and the Power 5 college basketball programs in the United States. The Power 5 basketball programs consist of the top 5 wealthiest collegiate athletic conferences in the United States. The conferences that make up the Power 5 are the Atlantic Coast Conference (ACC), Big 10 Conference (BIG10), South East Conference (SEC), Big 12 Conference (BIG12) and the PAC 12 Conference (PAC12). These conferences are the ‘blue chip’ premier teams that kids dream about and everyone watches. These athletes are highly sought after and recruited from a very early age. Coaches seek out talents that can help them produce on the court and hopefully be able to attract even better talent for the years to come.

“In 2016, the National Collegiate Athletic Association (NCAA) raked in a record $1 billion in revenue from media rights fees, ticket sales, corporate sponsorships and a proliferation of television ads anchored around the three-week long tournament (Parker, 2017).” Men’s collegiate basketball has become somewhat of a religion during the month of March. What does this mean for the schools to be competitive at the highest level? It means that they also have to compete off the court for recruits as well. This competitive advantage comes from the facilities that are going to help train the elite athletes on and off the court, leading to a major recruiting edge and potentially higher revenues and prestige for the institution.
The facilities that are currently being built are all beginning to replicate the blue chip basketball teams around the country. Blue chip basketball teams are generally considered to be the top teams in the country. They have deep history of success and would be some of the best basketball teams you would notice. This can be seen with the 30-million-dollar basketball only complex at the University of Kentucky, the 110-million-dollar renovation to Purdue University’s Mackey Arena, or the nearly 240 million dollar brand new stadium and training complex the University of Oregon built a few years ago. All of these facilities host the finest amenities that the student athletes can use to their advantages, from highly technical weight rooms and athletic training rooms to lounges and locker rooms that resemble 5 star hotels.

The Big 10 Conference within the National Collegiate Athletics Association (NCAA) collegiate athletics has been a premier conference since its early beginnings. The conference has been premier in all sports but men’s basketball has always been a major draw for sports fans. The reputation of Big 10 basketball is one that you will hear with words related to toughness, grit and blue collar work ethic. With that type of reputation comes the need for advancement to not only compete within the conference itself but also to compete nationwide in all athletics. Facilities where these athletes train for hundreds if not thousands of hours over their career can lead to having a successful program or not. Millions of dollars are being invested into such facilities in an ever-evolving “arms race” to attract the best athletes and bring championships home.

A. Background

The Power 5 Conferences are comprised of 65 schools as of the year 2017. The schools compete in a myriad of academic and athletic realms. All of the schools within the conference have storied histories ranging from putting people on the moon to winning many championships across athletics. The basketball competition played here is not like many others. There is a
mentality and physicality to play in leagues as competitive as the Power 5 Conferences. The teams constantly go back and forth with wins and losses, deep NCAA basketball tournament runs and outright competition. The individuals and teams that comprise the Power 5 Conferences are generally seen as the cream of the crop and have big aspirations. When trying to court these individuals and recruit them to join your team, physical facilities play a large role. When you have top-notch facilities, it plays a huge role in the type of physical training that can be done as well as draw in fans, donors and other variables that is the recipe for a great basketball team. Some schools within the recruiting arms race link up with other major facilities on campus. At Clemson University in South Carolina, the 63.5-million-dollar renovation to their basketball facility on top of all of the top amenities also boast an outdoor pavilion that only basketball recruits and their families can visit that overlooks the National Champion football team and fits 100,000 people on game day (Muret, 2016). This strategy gives an upper advantage to draw potential recruits into the university and athletic culture.

Why would these institutions worry about paying millions of dollars to attract the best talent from across the globe? It turns into good business for the universities. Many institutions cannot afford these fancy upgrades but those who can definitely have an advantage at putting the best product out on the court and when this happens a successful program can bring in millions of dollars to the university. Figure 1 goes to show the expansive nature of the Power 5 conferences and where each conference can be found. The map shows where most of the money is concentrated and where the best and brightest facilities can be found.
B. Evolution of facilities

The evolution of physical training facilities in the last 30 years has been a massive transformation in collegiate athletics but especially within basketball. The field of Strength and Conditioning in this country has evolved greatly over the last 30 years. The prescription of resistance exercise to improve strength and power has been commonplace in some countries for most of the past century, but it did not begin to rise to prominence in the US until the late 1970’s (NSCA, 2017).

With the inception of the National Strength and Conditioning Association (NSCA) in 1978, the ball was beginning to roll on what would become the impending arms race (History of NSCA, 2017). In the years before the major “arms race” of collegiate athletics, whichever team
you were involved with had their practice and playing fields and courts and that was it. Most of the time it was shared space and all you did was play your sport. Nowadays there are multimillion-dollar complexes that cater to the new age collegiate athlete, one who has more specific needs and a higher taste for quality. Facilities that can meet all the needs of these student athletes requires state of the art weight rooms, player lounges, study rooms and even places to get your hair cut at times. Many would argue these types of facilities may seem outlandish or that these kids have silver spoons in their mouths. Throughout the year these athletes, especially men’s basketball players spend anywhere from 50-60 hours a week practicing, traveling, playing, studying and most importantly being a normal student, even though they are not normal students in this sense. These facilities allow for them to have a place away from their apartments and homes. It is a place that they can relax from their hectic life and have these spaces for them to meet the demands of the 2017 athlete.

C. Scope

The scope of this project is to begin to understand how investment in the multi-million-dollar training facilities impacts the winning percentage of 25 Power 5 men’s basketball teams universities since the start of the “arms race” beginning in the late 1970s. The schools that were chosen must be a member of one of the 5 Power 5 conferences. 5 teams from each conference were selected randomly. The selections were selected by listing all of the teams by conferences alphabetically and numbering them accordingly, using a random number generator from Google was used to generate a random sample from the data. In labeling each time from the respective conference the first five numbers from the number generator decided my teams and I conducted the same process for each of the 5 conferences. This process gave me my total sample, which
gave me the total sample of 25. The study will look at the wins within league play and will not consider out of conference games.

D. Statement of Problem

Is there a return on investment of training facilities that correlates to a better win percentage amongst Power 5 Conference teams in league play? Some of the most successful conferences in the history of basketball have some of the largest spenders in the NCAA. The teams that have spent the most in many instances have had some of the greatest successes in basketball. Does this have serious meaning to suggest these multi-million dollar investments are worth the price tag?

E. Assumptions

In conducting a study looking at the potential impacts athletic training facilities places on the success of a men’s basketball program one must understand there are many more variables involved than just a training facility. The researcher assumes that training facilities not only impact wins and losses but also plays a role in attracting the best talent from coaches to players. These facilities give the athletes the best opportunity to have the greatest level of success as a student-athlete.

- We assume facilities play a role in overall success of program.
- We assume there are many more variables impacting overall success.
- We assume all teams selected have made a major investment to their training facilities.

F. Limitations

The limitations facing this study are the number of teams fall under the criteria of being within the Power 5 criteria. Once you get outside the wealthiest conferences spending on athletics
goes down significantly. Many teams outside of these conferences also have not had the same level of success regarding Men’s College Basketball.

- Number of teams that fall within Power 5 Conferences may limit statistical significance.
- Success amongst programs can be found most significantly in these conferences.
- Spending amongst athletics even within the conference may be skewed towards other sports such as football.

G. Delimitations

The study will look to describe that if there is a return on investment in terms of wins within the BIG 10 Men’s Basketball conference after a major monetary investment is made in regards to physical sports performance facilities. There is something to be said if these facilities help bring more wins to an institution. If this is to be true more universities will continue this ever-growing arms race to have the best facilities with hopes of developing a culture that continually wins. This study will be able to span many conferences but not to different leagues and levels of play. With that being said there are still delimitations to this study and they will be listed below.

- The study does not look into any other leagues or conferences outside of the Power 5 Conferences
- The study only looks at 25 teams where all of the data could be extracted.
- The study looks only to compare intra-conference data and not wins outside of the conference regular season.
• This study will not look at the many other variables that go into wins including coaching, recruiting and other factors of success.

In summary, within the last 30 years we have seen an explosion in spending of facilities revolved around men’s college basketball. The evolution and history of strength training has been on an exponential growth curve and we are seeing no stopping anytime soon and within the study we will look to study Power 5 conference teams as well as study those teams wins within their respective conference. The number of teams with money to spend on facilities are limited which may impact the significance of the study.
SECTION 2. REVIEW OF LITERATURE

A. History of Sports Performance

The history of sports performance or strength and conditioning is not necessarily a new revelation in the world of sports. Ancient civilizations throughout the world have trained to enhance their strength and conditioning whether it was for battle or competition. Modern strength and conditioning in the United States truly began around the 1960s with a coach by the name of Al Roy. “In the 1970s if you were not training seriously in a weight room there was a great possibility that you were not competing for a championship” (Shurley & Todd, 2011, p. 4). With this being said, there now became a rush to get bigger, stronger and faster and that came in the way of weight training. Boyd Eply, which most in the profession consider being the Godfather of strength coaches started off at the University of Nebraska in a weight room even in the late 1960s (Shurley & Todd 2011, p.5). With an early exposure to resistance training and the right timing, an injured Epley found himself training injured football players, which caught the eye of Hall of Fame football coach Tom Osbourne.

The spry and brimming coach in Epley had a visionary outlook on what he could do with the Nebraska Cornhuskers Football team that lead to a major upgrade to the football training, set with new weights and a new profession. Strength and conditioning is often seen as a family tree of sort which most in the profession call your “coaching tree.” From this coaching tree can come many opportunities for jobs in a very competitive field. For example, you may not be a direct lineage to the founding fathers of strength and conditioning in the United States but your mentor or boss many have lineage back to that person and thus you are now associated with that coach forever. In many inner-circles you are seen as disciples of that coach. From Boyd Eply to a young
coach in Matthew Frank there has been many coaches in-between, with my personal oldest lineage can be traced back to a coach named Mike Boyle out of Boston, Massachusetts. Both my current and former boss both have strong relationships to Mr. Boyle. I have never met the man but I can be easily traced back to him from the people that I have worked for. It is a funny system in which it is very much a who knows who business where if you can get out of the weeds a promising career can take place. As much as the evolution of the facilities has taken place as much can be said about the style of training that is now being conducted. It is no longer a dungeon like weight room with old rusty weights, but instead it is a scientific lab with the latest timing gates, force plates and force transducers. The weight room has continued to change on a yearly basis. For many years and still to this day in some sense strength and conditioning coaches have been stereotyped for just being ‘meatheads’ that love old and smelly weight rooms. This could not be further from the truth. In today’s standards if you do not have at least a master’s degree chances are you will be looked right over for a job and many are pursing Ph.D.’s and more. To speak further on the expansion of college sports performance one must be able to speak on the facilities and the multi-million dollar arms race that is pushing some of the public universities in the United States into debt. Out of the five wealthiest conferences in the United States, consisting of (BIG 10, PAC 12, SEC, ACC & BIG 12) spending has nearly doubled in athletic facilities. “In 2014, these 48 schools spent $772 million combined on athletic facilities, an 89-percent increase from $408 million spent in 2004, adjusted for inflation. Those figures include annual debt payments, capital expenses and maintenance costs” (Hobson & Rich, 2015). How will this type of spending factor into wins and losses? How will this help equip our student athletes with the skill set to go on in the future pending that most will not play professionally?
The history of Purdue Sports Performance also known as Purdue Strength and Conditioning is about 35 years old. Within that time there has been some major expansions and changes. From a personal perspective and a collegiate strength and conditioning coach, I have been involved directly and indirectly with nearly 200 million dollars of spending on new facilities, equipment and the latest technology. According to former Athletics Director (A.D) of Purdue University, Morgan Burke when the newest renovation to the Mackey Arena Sports Complex, “we needed to bring a 40 year old venue into the 21st century (Mackey complex project, 2007). In the scope of the men’s basketball program, which is one the largest revenue making entities in the athletic department and from a head coach that signed a 8 year 2.3 million dollar per year contract in 2011, “Mackey Arena is one of the top places in the country for basketball," Painter said. "One of the best aspects of this renovation is that the integrity of the arena will remain the same. This plan is integrating state-of-the-art facilities and still preserving the tradition of the past (Mackey complex project, 2007)." These types of facilities do not only bring up the status of Purdue Men’s Basketball but also are major keys for recruiting, fan experience and hopes of many more wins. To go along with staying competitive in an ever changing dynamic of men’s college basketball there are always gaps within the program. The gaps that are found need to be filled quickly to maintain an edge and to win. In a report from 2011 after Purdue coach Matt Painter signed his contract, A.D. Morgan Burke said this; "Where we have gaps we need to fix them," Burke said. "You can't have aspirations to be champions unless you're willing to do the things necessary. We have the resources backed up behind those commitments to ensure we can put them in place." (Mackey complex project, 2007).

This type of change comes at an expense but Purdue is unique in the sense of how and where it gets its money. With a large booster club, the John Purdue Club and other successful...
fundraisers, Purdue does not take state funded taxpayers’ money for its athletic programs. Purdue needed a major face-lift especially with many other schools within the BIG 10 building new facilities or making major renovations to their basketball facilities. “Since 1980, Iowa, Michigan State, Wisconsin, Ohio State and Penn State have built new arenas, while Illinois, Minnesota and Northwestern have renovated their facilities (Mackey complex project, 2007)

The arms race within the BIG 10 not including the other conferences is one of the fiercest in all of college. Why is this? A conference consisting of mainly “flyover” states, it is because basketball is the lifeblood within the BIG 10. Although some may argue that football is still king, men’s hoops have certainly been on the rise. If people had the opportunity to be in Mackey Arena on February 28, 2017 as the Purdue Boilermakers took on the Indiana Hoosiers in front of a standing room only crowd for the BIG 10 regular season title one could say basketball is king. Although this is only speculation due to a few years of underperforming on the football side you could see why Purdue Basketball has seen a rise in interest throughout the nation. In a report from a related conference official speaking on the major spending of collegiate athletics he made this statement; "By the time we're done ... we'll be right back behind them all again," said Stephen Ludwig, a member of Colorado's board of regents. "It's a never-ending arms race to build shiny objects that appeal to 17-year-olds, so they'll pick us instead of someone else."(Hobson &Rich, 2015.)

B. What’s the Cost?

What is the cost of these major facilities upgrades could be coming to a halt if not kept in check? Could these cuts come at a cost to the wins of collegiate athletics especially those who bring in millions of dollars to the athletic department? With spending on these facilities in some people’s minds has gotten out of hand, those in the revenue based sports (football and men’s basketball) see their sports as the driver not only to the other sports but as major recruiting tools
for traditional students (even if they pay fees in some instances to cover the costs associated with this level of athletics.) To be able to understand the immensity of spending that is going on in collegiate athletics you must not only understand basketball but must look into football. After doing much research this is one of the more extreme examples of spending on facilities but it has had others that follow in the same trend. Here is what the 2017 National championship winning football coach Dabo Sweeney was quoted saying after Clemson agreed to build a $55-million-dollar facility for its football program, “Our football program is the engine to our athletic train. The ability of that program to be successful, be able to recruit, is important for the whole department, and I'd argue, for the whole university.” Athletic director Neff said; "For that incremental cost of pouring concrete (for mini golf holes), we feel there's going to be a big ROI (return on investment) for it being new and unique to Clemson (Hobson & Rich, 2015).

Understanding how all of this is being financed you need to be able to dive deeper into the enormous cost that is being placed on the universities to maintain the best image. This comes at the cost of the fans and students who either attend the games and or attend the university. Rises in ticket prices, which many say are ‘pricing out’ the average fan or raising tuition cost for students to help cover major university deficits are a partial cost of the increase in facilities spending. Although collegiate athletics is a major enterprise there are groups of people who are fighting back against the crazy spending on athletic programs. The Georgia Board of Regents enacted a bill to limit what these universities are able to spend from the student’s tuition (Lavigne, 2016). Furthermore, these facilities can have a major impact in many other ways and can turn a losing program into a competitor overnight in some instances. The University of Mississippi’s basketball Head Coach Andy Kennedy said after his club played their first two games in a 96.4-million-dollar arena, “It has transformed our program. We moved in to The Pavilion after the SEC
season and had two home games in 48 hours. Both games sold out and we won both of them. There was just a new energy that came along with Ole Miss basketball” (Snow, 2016). While more research has been conducted on the topic of debt within the colleges that are accruing the major debts the NCAA has shaky numbers at best and have yet to publish.

Sander and Wolverton wrote the programs that say the elite might not face the financial issues as those universities trying to join the elite ranks (Sander & Wolverton, 2009). During the time the research was collected for the study conducted by Sander and Wolverton the United States was in a major economic bubble and where many of the institutions were wrapping their economic debt into bonds, many of the bigger schools were going directly to the bank for these loans (Sander & Wolverton, 2009). Now, that the economy is back to being more stable the spending is right back on track and the previous worries of the spending seems to be an afterthought even though the debt is very real. What many of the universities are able to do is raise significant funds from private donations. Often times, not all the money can be covered by these donations so that’s where the debt can be tacked on. The University of Iowa 47 million-dollar basketball arena was one of the cases where money was raised privately but the construction cost was taken out as a loan (Sander & Wolverton, 2009). The way the school is financed regarding its athletic programs differs from institution to institution. Many of the schools are funded through the tax-payers money though the university is regulated by the state in which it resides. Many of these schools that fall into this category fall into major debt with the state when these major athletic projects are funded. There are a few special instances where the public universities are self-funded through major booster programs or different means of paying for its athletics programs. Purdue University’s athletics is not associated with the State of Indiana and runs as a separate entity completely
from the academic university. It is one of the universities that runs in positive finances compared to many of the other institutions. David Ridpath with Forbes wrote this in 2014

“The costs of maintaining an intercollegiate athletics program at the Division I for-profit level are immense. There’s a vigorous off-the-field arms race for building the most attractive facilities and bringing in big-name coaches. Then there are travel and recruiting budgets, along with scholarships. These are only a few of the high end costs, and schools like the University of Texas – with outside money flowing in from huge TV contracts, sponsorships, and boosters – can afford to do these things because they have an overall athletic budget in excess of $150 million” (Ridpath, 2014). What most people are unaware of are the immense subsidies that are reaching into the pockets of students and residents alike to pay for much of the glitz and glamour you see whenever you turn on a collegiate athletic event. As of 2012, “LSU, Nebraska, Ohio State, Oklahoma, Penn State, Purdue and Texas were the only schools to report no subsidy money in 2012 (Berkowitz, Upton & Brady, 2012). To further show the point of how schools fund their athletic programs this study conducted these findings; “According to the National Collegiate Athletic Association (NCAA), just 24 of the 230 public Division 1 schools had balance sheets in the black and were able to support their athletic programs without help from the general funds of the university (Wojtys, 2016). These schools are definitively anomalies when it comes to athletic spending which is directly correlated to the financing of facilities. This becomes very much an important point in understanding the entire complexity of the eventual outcome of a winning program. In summary of this section if the universities are unwilling to spend money to maintain their athletics they will fall behind their competition. This goes much further than just the wins and losses. It goes in to competition for enrollment and other finances that come from a winning team.
C. Evolution of Sports Performance

The evolution of sports performance has also been part of an arms race of sorts where programs have grown exponentially especially within the last 15 years. Once thought about for most athletes that they would become ‘muscle bound’ and not be able to move has turned into a complete science full of the latest technology, educated professionals and ultimately much better athletes. The men’s basketball teams of today have not only been brought up in an era with major differences in training, nutrition and access to many different coaches and players. Nowadays players train year round with a sports performance crew that can range from one coach to five coaches. The players will have specialized training for each day. They will travel to exotic locations to play these games and have many other support staff along the way. Sports performance methodology and technology changes very quickly so as a coach and university you always have to be on top of what’s coming next. Technology is one of the biggest growth aspects surrounding collegiate strength and conditioning aspects. Although barbells, squat racks and other traditional equipment continues to evolve the technology that goes into understanding the entire athletic spectrum and giving an overview of an athlete from the time the step on campus until their final play has seen the biggest growth. From a growth in new sports science coaches that are able to crunch the data that is being derived have an advantage in performance training.

Sparta Science is a Silicon Valley based company specializing in force plate technology, has an algorithm that can help predict an athlete’s susceptibility to different athletic injuries based on a series of jumps and screening techniques. A recent collaboration with the University of Maryland’s basketball team brought out this statement from University officials. “Through the partnership, Maryland Basketball is using the state-of-the-art Sparta platform to gain meaningful insight on how to improve student-athlete performance and reduce player injury risk. With Sparta, Maryland’s program can monitor force readiness and player health and maximize athlete potential
through the Sparta Scan, which uses scientifically validated data models to quickly diagnose and track each athlete” (Maryland Athletics, 2017).

If you were to walk into a training facility today what you would see would generally be a lot of Olympic weight platforms, which essentially look like a basketball court hardwood. You would have other staples of a weight room consisting of squat racks, barbells, dumbbells and other scattered machines. Many places now have force transducers placed within the turf or other playing surfaces. You may also find timing gates and a plethora of iPads and computers all hooked up to different machines that help strength coaches paint the best picture of an athlete's training and the like. Although now much more technological in nature, you will never get a strength coach away from the clamoring of weights as they drop and the appreciation of a great barbell that spins as the athlete attempts to catch a clean and jerk. A cost of a barbell can range from $600-3,000 dollars to give some perspective on the cost of nice equipment. If you are looking for the services of Sparta Sciences on a yearly contract which provides the equipment generally on lease and 24/7 support you are looking anywhere between $25,000-50,000 annually. Although these prices are not listed to the public, I have sat in on meetings and met with companies at their facilities to gain greater insight on what it takes to run a top-notch program and have the finest facilities and all the goodies to go with it.

D. Outside Impacts from Facilities

The study that is being conducted is not looking at the many other variables that make up a winning team such as coaching staff, recruiting success or the team chemistry that must be in place to have a successful program but it would not do it justice to think that a new facility does not play a role in all of these metrics and more. Former University of Dayton Head Coach, Archie Miller was quoted in a *Sports Illustrated* Magazine article on the impact the topic of facilities can have on recruiting saying this, “Because of that we can show that type of investment we have
in our program from donors and the administration,” said Miller. “It is impressive. Being able to put together the presentation we have allows us to recruit a kid who can go anywhere.” (Snow, 2016).

Another huge push for these training facilities are the places many of the athletes are coming from. Many high schools, AAU or Amateur Athletic Union, are travel teams that work to scour the country and play the best talent around. Often what you will see is the AAU leagues help a young athlete get recruited from a much younger age opposed to playing for their high school team. This has caused much controversy over the past decade or so as young athletes are exposed to the potentially toxic system that the AAU system has developed. These teams and parents are providing the athletes with much more than a set of dumbbells in their basements. High schools are spending millions of dollars as well to build field houses, turf fields and better weight rooms than some universities. Although in a different sport than basketball, high school athletic facilities in Texas are spending multi-million dollars to create facilities to help athletics. These facilities are creating a rift between rich and poor schools but the reality is the spending is taking place even at a high school level (Smith, 2016). AAU teams play in gymnasiums that fit 10,000 people and can be watched on national television, and parents are forking out more and more money to give their children the best opportunity by sending them to private training camps and hiring personal strength coaches, nutritionist and tutors (A Multi-Phased Mission, 2011).

Digging deeper into the issue for the competition of athletic facilities, smaller universities without the huge budgets of the big universities have to compete at increasing rates. “Thirty years ago, you could throw a stack of weights in a room and call it a fitness center,” says Adam Hertz, athletic director at Swarthmore College, in Pennsylvania. But now many
students are entering college accustomed to the state-of-the art facilities that have become common in the nation's best high schools and among elite traveling teams (Kelderman, 2008).”

Although many people believe that these facilities come at a major cost that only reaches a small portion of athletes at the universities these facilities are designed to do much more that hopefully leads to a winning culture on and off the competition field. One of these objectives of building a winning environment comes from the development of leadership. “None of this should be a surprise given that leadership itself is a concept ‘freighted with so much meaning’ and ‘libidinal energy’ that it tempts participants, facilitators and organizational champions to appropriate and ring-fence it’s meaning to serve their diverse interests” (Ford & Harding, 2007 p. 482). With these facilities comes much more than a place to lift weights and see the team doctors. These facilities are able to accommodate student athletes in ways never seen before. These facilities will hold areas where these students who have essentially a full time job playing their sport can develop many skills off the court. With there being time restrictions for student-athletes from the governing body of the National Collegiate Athletic Association (NCAA) having a facility that can help the athletes stay focused and on task becomes a task on its own. When NCAA bylaw 12.4 was put into place limiting 20 hours a week in required time spent with coaching and staff having the facilities with all of the amenities does help (Ayers, Pazmino-Cevallos, & Dobose, 2012).

Leadership rooms, state of the art academic areas and industry leading sports medicine to heal their bodies can all help cut down on wasted time and most of all help the student-athlete and staff. Many people on the outside never see what goes into a single day of a Division 1 men’s basketball player. They have to meet demands many other students could never fathom. Even nearly 20 years ago the Fairfield University in Connecticut as a small school was making major
advancements in the best interest of the student athlete when the built their 2,200 square foot study space right where their 500 student athletes could take full advantage of state of the art equipment, convenience of not traveling across campus to get to a library or waste the precious time between competing, practicing and studying (Balancing Athletics and Academics, 1999).

When trying to develop strong leaders for society these facilities can help play a major role in giving the student athletes a leg up. These facilities give the amenities to draw amazing talent looking to help build the leaders of tomorrow. Building leaders today on and off the court will lead to strong leaders once their careers are over. This type of development will lead to strong leaders when the game is on the line or when there is a conflict to be handled. This relates further to the need for facilities that not only accommodate for building stronger and faster athletes but for athletes who are well rounded and properly equipped for the rigors of the world. Carroll and Nicholson said this quote well, "We believe that issues of power, resistance and conformity often mark the work of those who research and deliver leadership development in ways that scholars and practitioners do not yet adequately understand. Equally, they mark the organizational terrain that participants coming out of development experiences will need to recognize and contend with." (Carroll & Nicholson, 2014). From a personal perspective I have seen the profound effects these types of facilities can play into the lives of the athletes. It gives coaches also a place to grow, learn and lead all in the efforts to build a winning program. Strong leaders will come out of these programs. Those tasked with developing leaders must understand immense complexities of the people they are trying to develop. Do they understand the type of leader they are trying to become? Do they understand the organization or people they are going to lead? In order to be a leader, a variety of experiences in different and complex situations that led to their inevitable assent into leadership. How these leaders handled these situations, the followers
who listened, and ultimately the outcome, helped guide the different positions where they are allowed to lead.

E. Personal Perspective

A personal perspective on this topic is one that I can share some valued input in. I have been a part of the Purdue Sports Performance staff in many realms, as a volunteer, clinician, intern and my current status as a graduate student. I have been a part of many renovations, new buildings and different staffs. I have benefited greatly from being able to work in top-notch facilities that I truly believe give our athletes the best advantage to succeed in all realms of life. Also I have had the unique opportunity to work with the Purdue Men’s Basketball team, which has been nationally ranked since I have been working with them. This perspective has allowed me this unprecedented look into the combination of many things but very importantly how facilities can not only help those who are training and playing currently but the talent that they can attract albeit from coaches, staff, players and donations from boosters.

It has always been a tough call from my perspective to say; “do these athletes really need all of this?” In most cases, yes, the difference between getting home at 3 in the morning because you have fly down to Indianapolis go through security, travel back to West Lafayette and finally make it back to your house just to be back in class by 8 A.M. and having chartered a private jet that conveniently picks you up and drops you off at the airport on campus is the difference of many hours. The convenience of having all of your needs from food to practice courts, weight rooms to medical facilities all under the same room can give a leg up in many conditions. Many institutions will claim that they are not trying to compete with each other, be that within the conference or nationally but I disagree with them because who has the best and brightest facilities sure seems to draw the best talent in all regards. These schools especially in the Power 5 Conferences that have the best teams generally will see large increases in applications to their
universities on levels that can make presidents of universities raise their eyebrows or lift that pen and sign the check that will allow these facilities to be built.

Also from my perspective as a coach having these top-notch facilities not only afford me the access to state of the art technology and equipment but other features such as spacing, lighting and other aspects that go unseen to the casual fan help me personally give the best training opportunities to the basketball team. From a coaching perspective you truly become spoiled when you train teams in the United States. I have had the opportunity to train other places around the world and although those facilities are nice for their areas they are hard-pressed to compete with what we have here and that also helps us draw the best talent around the world.

SECTION 3. METHODOLOGY

A. Methodology Summary

The methodological approach to the study was to gather information of wins and losses over a time period 5 years before and 5 years after a major investment of money into a physical training facility (a full training facility, new stadium or combination of both). There is a 3-year gap between those 5 years’ periods to take away some immediate variability and control for if there is a difference in winning percentage after such an investment. The data was collected using a sports reference website called sportingreference.com that has aggregated all the data for all of the teams that were selected by a simple random sampling procedure. Out of the Power 5 Conferences 5 teams were selected from the random procedure to help give a spread of each conference. With a set alpha score of .10 we felt would be representative because of the observational nature of this study we could allow for some more slack. There were many
variables to try and control and we believed we were looking for more correlation than a need for exactness.
A paired sample T-Test was used in the statistical software SPSS since we were comparing the same teams from each 5 year gap. Upon further testing we decided to use the
statistical test of a power calculation and used the SAS94 statistical software to run those calculations because SPSS does not support those features.

B. Variables

- Control the study as much as possible
- NCAA Sanctions leading to bad data points
- Teams with significant decrease in winning percentage
- Coach changes
- Funding for other athletics.
- Final sampling size.

C. Sample

The sample will use a simple random sample using the process described earlier to select 5 teams from each of the Power 5 conferences which totals a sample of 25 Power 5 Conference teams. Five teams from each conference will represent that conference. The final sample size is 25.

D. Analysis

Analysis of the data will be conducted using two different statistical software programs. First, data will be tested using a paired sample T-Test with an alpha of .10. The study uses a paired sample T-Test to compare before and after winning percentages against each other to find out the difference before and after the investment in physical facilities. A second statistical software was used to administer a power calculation to find out the number of teams we would need to study to become significant at a level of .05. This was decided upon after significance was not found with the original 25.
E. Data Sources

All of the wins and losses data was collected using the sportingreference.com page to find each team and be able to look at conference wins and losses for each representative season. All of the financial data was collected on each universities public athletic page website. All data was public.

F. Summary

In summary all data collected on the 25 original teams was sampled using two statistical test to look to find significance if an investment lead to a better winning percentage after said investment or before. Our hopes hoped to show significance after the investment.

SECTION 4. ANALYSIS

A. Analysis Overview

Through the analysis using the statistical test of a paired sample T-Test and a Power Calculation we were only able to find a significance of .132 for our alpha of .10. Upon further study of our sample we had 4 teams that had significant decreases in winning percentage after an investment was made to the facilities to assist each respective men’s basketball programs. The 4 schools that statistically were not ‘outliers’ had a negative pull on our P-Value. Further research allowed us to ethically pull out one of the teams, University of Southern California due to major NCAA sanctions placed against them leading to 18 games being forfeited and large sanctions slapped against them for recruiting, coaching and other violations. Our sample of 25 moved down to 24. The other three schools upon further investigation had poor representation in the wins and losses
due to only speculation of tough conferences, funding focused on other sports, coaching changes which leads to recruiting differences and the list goes on. These speculations do not warrant ethically eliminating them from the pool.

B. Statistical Findings

As stated in the summary a P-value of .132 was found after running the different statistical tests. In an effort to find out the number of teams that would be necessary to find true significance at a more respected P-Value of .05 a Power Calculation test was used and found that you would need 87 teams to be in the sample. This would not be possible due to lack of teams to fit the criteria and funding used outside of the major conferences decreases substantially outside of the Power 5 Conferences and we would lose the ability to randomly sample teams. Although, not all was lost, studying the 24 teams within the sample we noticed some trends to suggest that the investments were beneficial in many instances. University of Oregon saw nearly a 32% increase in conference wins after the large investment of $236M was placed into their stadium and training facility. On the flipside of that we saw teams such as Kansas State experience 20% decreases in wins after the investment took place. Looking to understand the Before Winning Percentage (BWI) that which showed a spread of winning percentage of .6 through .8 we saw the median increase after the investment in the AWI between .3 and .9. Overall, we were looking to see the winning percentage increase after the investment and we saw a large spread of decreases at -20% and increases all the way slightly above 30%. We did not expect to see all teams who invested to show increases because there are too many variables that play major impacts in winning and losing at such a high level.
Fig. 1 - Scatterplot above shows a $y = x$ reference line where after winning percentage (AWP) is show on the Y-axis and before winning percentage is shown on the X-Axis.
Fig. 2- Show a boxplot depiction of BWP, AWP and Winning Percentage Increase (WPI). This shows not significant outliers and the teams had an array of increases and decreases overall.

C. Analysis Summary

Although statistically we were unable to find a P-Value that met our criteria of .10 we were able to see some correlations in this observational study to suggest that spending on facilities can have a powerful impact on the overall wins and losses within these collegiate basketball powers. There is also reason to believe the impact that these investments have on the many other variables within such a major team sport setting has on the overall success of the program.
A. Conclusion

Upon completion of this study statistical significance was not found but that does not suggest this study was not useful in suggesting the impact these large investments have on the overall success of men’s basketball programs and the institutions alike. There are many variables that go into place besides the grandiose facilities. Coaching, players, recruitment, sanctions, funding and strength of conference all blow like the wind. These many variables can highlight the brand new facilities but also cannot see return on investment for many years it at all. It’s a bet worth taking and you will continue to see schools invest millions and millions of dollars into their high-revenue athletics in the hopes for large success. Many hands are involved in these decisions and it will be interesting to see where the space race ends. In my opinion, it will not happen for a very long time. When a 3 week men’s basketball tournament can bring in hundreds of millions of dollars just in television revenue and advertisements and the like the money will continue to get spent. “On the revenue side, NCAA March Madness generated approximately $800 million, while fans bet approximately $9 million dollars on the games. The NCAA spent $85 million on the production of its Division 1 Championships. Approximately $194 million went to conference offices and independent schools from the NCAA as support funding, while $75.6 million was deposited in the NCAA Student Assistance Fund, with $26.1 million diverted to the NCAA’s academic fund (Wojtys, 2016).”
B. Suggestions for Future Research

Suggestions of further studying would look to expand upon the number of teams researched to find out how a bigger sample would have an effect on the outcome of the study. Putting together multiple other variables such as coaching changes, rank in recruiting class, further historical success, funding into other athletics and further competition within the conference or even non-conference could have on the success or non-success of these major investments. When dealing with athletics it truly is hard to pinpoint one specific area that impacts winning. Further studies would benefit greatly with a meta-analysis over a larger time period and a study that looked further into the future as the spending continues to take place would be interesting.

If time permitted a survey of student athletes concerning facility importance in school selection as well as what are they looking for in facilities would a point of emphasis. To dig deeper understanding current and future basketball student athletes and the role that a facility played or plays in their decision to attend an institution could give greater support in the importance of the facilities.

Understanding each school and conference could be another interesting area of investigation. Each school has certain tendencies that may be interesting for example one of the schools that had a major decrease in winning percentage after the investment was Mississippi State, from personal knowledge Mississippi State is in the South Eastern Athletic Conference (SEC) which is well known for its football prowess and the SEC has one major ‘blue chip’ basketball team, The University of Kentucky. Much of the athletic funding for Mississippi State University goes to its marquee sport of football and oftentimes its other sports get overlooked.
This could definitely have an impact at certain universities that place their funding into their biggest revenue makers.
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