Disc Golf as a Public Health Option: Utilizing America's Natural Resources to Offer Low Cost Outdoor Exercise

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DISC GOLF AS A PUBLIC HEALTH OPTION: UTILIZING AMERICA'S NATURAL RESOURCES TO OFFER LOW COST OUTDOOR EXERCISE

By

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Abstract

This paper explores the appeal and growth potential of disc golf as a way to offer a fun and immersive exercise experience. In a time when the United States is a world leader in obesity, understanding issues like appeal, exercise motivation and accessibility are important as the country looks to redirect itself towards a healthier future. In order to understand what brings disc golfers in, a survey of player motivations across demographic groups was completed using a rated average system. In doing so, researchers gained insight and verification of the game’s appeal under the framework of previous public health and sports motivation framework. The strongest motivation factors among players were being outside, getting exercise, convenience and making progress in mastery of skills. There is no public health silver bullet, but what this paper hopes to accomplish is the promotion and understanding of a relatively young sport that could appeal to the millions of people who have yet to truly see its potential.
Introduction

Disc golf, also known as frisbee golf, is a relatively new, but growing sport in which players use a modified frisbee, known as a disc, to navigate a course in as few strokes as possible. Gameplay is akin to golf, where players throw from a tee and count their strokes until they successfully complete the hole by putting the disc into a basket. Courses are usually comprised of 18 holes and can range in length from around 3,000 feet to 10,000 feet or more on championship level courses. The premise is simple enough, but elaborating on the game’s appeal and potential for growth requires further elaboration.

In its modern form, disc golf was established in the mid 1980’s as a way to competitively throw Frisbees amongst friends and the great outdoors. Today the Professional Disc Golf Association (PDGA) is over 90,000 members strong and continuing to see growth previously unprecedented to the sport. There is a dedicated culture and brotherhood within its community that is diverse in its population but united in its enthusiasm. Within the culture, the disc golf community expresses great enthusiasm about finding ways to gain exposure for the game, with support from players, disc manufacturers, and local disc golf clubs.

However, because disc golf allows players to engage with it at their own pace, most disc golfers play outside of the competitive scene. For seniors and people beginning to make changes in handling their physical health, it is low impact, low intensity, and provides enough fun to not feel like work. Included in this fun is the enjoyability and connection to the outdoors that is innately important to all people. For Parks and Recreation departments looking to use funding efficiently, the low cost of installation and maintenance is an attractive argument to promoting its growth. For families and low income individuals, the costs of equipment and play are dirt cheap.
Once a potential player has purchased their first discs, the option to play disc golf for free in one of America’s many public parks, without any scheduling or organization involved, enables a freedom of use and expression that is unlike any other sport. Despite the singular nature of gameplay, there is no undue burden to be competitive, and the ability to play with old friends or make new ones gives it a social aspect that is comparatively unique. In this thesis paper, I will elaborate on why this appeal means that disc golf can provide potential solutions to America’s growing obesity epidemic by getting people back outside and exercising.

America has some of the greatest natural treasures and land availability of any country on earth at our disposal. It is of grave importance that we recognize and preserve this to our benefit. As President Lyndon B. Johnson declared upon the signing of the Wilderness Act of 1964, “If future generations are to remember us with gratitude rather than contempt, we must leave them something more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it.” As the technology around us becomes more encompassing and we further remove ourselves from natural exposure, this statement rings ominously, warning us of the choices that lay ahead of us as a nation.

In this research paper, I will pose and try to quantify an answer to the following questions:

A) What are the key motivating factors that maintain disc golfer’s interest and involvement across varying experience levels?
B) Why are the low costs and barriers to entry important to promoting engagement and frequency of play?
C) Why does disc golf’s non-competitive environment improve its appeal to such a diverse
Benefits of Outdoor Exercise

Much has been written on the importance of outdoor physical activity and nature’s influence on our well-being. The human relationship with nature has always been a topic of significant study and discussion, with scientific studies suggesting the ability of outdoor exercise to benefit physical and mental health. In recent years, scientific process has supported what many have felt for generations, that regular outdoor physical exercise can benefit physical health, mental well-being, and success in life.

Blom, Alvarez, Zhang, and Kolbo (2011) sampled a group of elementary school students grades 3-5 and collected data regarding their physical aptitude using the standardized Fitness Gram testing metrics. Other factors measured were students’ scores in math and language arts, number of disciplinary actions, and absences. Researchers also measured participation in free and reduced lunch programs to control for differences in socioeconomic status. Results proved statistically significant showing that students who enjoyed more regular exercise tend to have fewer absences, fewer instances of disciplinary actions and better grades in math and language arts (Blom et al 2011). Studies such as this show the importance of providing our nation’s children with regular access to physical activity to foster their success in other areas of life.

Utilizing the outdoors is one of the best ways to promote a long-term lifestyle of physical activity as it improves the motivations and sentiments of those exercising. In Focht’s 2009 study, participants were told to walk at a self-selected pace for 10 minutes, one session on a treadmill and the other outdoors. Participants were asked to complete a self-assessment rating their revitalization, enjoyment, positive engagement, physical exhaustion, and intent to walk for
exercise again before, during, immediately after and 10 minutes after the end of the walk. In all of the categories, except for physical exhaustion, outdoor walks received a higher rating than the treadmill walks (Focht 2009). Even more encouraging is that participants maintained a higher average rate during the outdoor walk while still rating it as less tiring than the treadmill. The motivating effect of the outdoors is capable of being quantified and is continuing to prove impactful to those experiencing it during exercise.

Even as an adult, the benefits of exercising translate beyond just the physical activity itself. College students often struggle to uphold the motivation to use their limited spare time for exercise, but it is of even greater importance to do so. De Vries, Van Hooff, Geurts and Kompier (2016) sampled college students who self-reported as dealing with study-related burnout. Participants were rotated between control groups that did not exercise and intervention groups that completed three one hour, low intensity running sessions per week for 6 weeks. Intervention and control groups were measured weekly on their emotional exhaustion, need for recovery, self-efficacy, study-related fatigue, sleep quality, and sleep duration. Over the course of the study, students in the exercise group either improved or recovered from their symptoms of fatigue and emotional exhaustion and experienced higher levels of sleep quality (De Vries, Van Hooff, Guerts and Kompier 2016). This shows that when life challenges us, it is even more important to find relief and recovery in the form of exercise.

Outdoor exercising is one of the most highly recommended ways to help improve one’s mental state, and offers specific advantages for those suffering from mental illness. As explained by Maier and Jette (2016), individuals suffering from mental illness can easily lose focus or motivation to exercise in gym settings. The environment of real or perceived judgment by others
can quickly unsettle people with mental illnesses, whereas in outdoor settings the individual can focus on themselves, their body, feeling pleasure and conquering challenges.

The article also states low intensity activities such as simple walks in the woods or more intense activities such as rock climbing can provide individuals with more connection to their environment and improved self-esteem. Maier and Jette (2016) go on to reference the use of structured group activities such as outdoor yoga or horseback riding to give individuals increased feelings of trust and belonging, an important component of mental health recovery efforts. Another suggestion included joining conservation societies and other group efforts to increase ownership and pride in nature. Disc golf gives individuals the choice of any one of these dynamics, providing solitude through solo play, social interaction through group play and community participation, and ownership through coursework. While quantifying these benefits has proven challenging, public health researchers are continuing to bring them into focus as another piece of the puzzle in treating mental illness.

**Tackling Obesity**

It is growing more apparent that as the world around us gets more and more removed from our natural state, we are failing to meet our physical exercise and outdoor exposure needs as a society and setting ourselves up for failure in the years to come. According to the Aspen Institute’s State of Play 2016 report, the percentage of American children that exercise to a healthy level has been in steady decline for multiple years, hovering around 40 percent for kids aged 13 to 17. Even worse, amongst kids aged 6 to 12 the rate has fallen to 26.6 percent showing a dangerous trend for the newest generation. New trends such as e-sports offer similar experiences without the exercise, thus failing to fill the activity gap while simultaneously
offering autonomy, competition, intensity and socialization all at once. If we are to get kids back outside again, we need to respond to what they want instead of forcing an aging paradigm on them.

Lifestyles often come from the parents and are ingrained at an early age. Beginning a lifestyle that generates obesity can reduce both the length and quality of one’s life. According to Biro and Wien (2010), health factors related to obesity can shorten an individual’s expected lifespan by as much as 7 years. The study goes on to mention that two-thirds of children in the top BMI quartile remain in that quartile upon transitioning into adulthood. The longer a child is obese and the later in childhood they remain obese, the more likely they are to become obese adults (Biro and Wien 2010). This means that the preventative fight against obesity needs to start with our youngest generation while the chance of correction is higher and medical costs have yet to seriously compound.

Obesity in America is a public health epidemic that needs immediate corrective action. It threatens people across age groups and promises to cost American taxpayers as much as $200 billion annually in preventable healthcare costs. 38 percent of adults nationwide are obese and age studies suggest that kids are trending similarly. The rate of obesity in children ages 2 to 19 has averaged 17 percent for more than a decade. Trends suggest that onset of obesity is starting earlier as well with children aged 2-5 spiking with an 8.9 percent rate (Segal, Martin, and Rayburn 2016).

By looking at the increase in obesity rates in both children and adults we can assess that as a society we are becoming more sedentary and failing to meet our needs for physical exercise. Technology enables us to live in our own world, become more wrapped up in our subjective
experience and limit our exposure to new thoughts, feelings and experiences. The full public health impacts of our obesity crisis and our experience crisis may not reveal themselves until the damage is already done. Some of these impacts have already come home to roost when we consider the decline of our health mentally and physically.

Children of lower income families are more likely to not meet the minimum level of exercise and play fewer team sports than children from higher income families. In families making less than $25,000 per year, 38 percent of kids played team sports compared to 67 percent from families making over $100,000 per year. However, the State of Play report also mentions that recent movements are taking shape to close this gap through community center based sports leagues and redistribution of used sports equipment. In Washington D.C., a nonprofit organization called Leveling the Playing field has worked to donate and distribute $1.4 Million in used sports equipment to underprivileged programs (Segal, Rayburn, and Martin 2016). Facilitating sports activity through programs such as Leveling the Playing field are crucial in closing the participation gap.

Within the disc golf community, Innova has lead the way with their Educational Disc Golf Experience, EDGE. With funding from Innova and donations from the disc golf community, the EDGE program gives students of all ages their first exposure to disc golf and teaches them the game’s basics. Instructors are trained to cover scoring, playing, etiquette, environmental concern and civic duties as a disc golfer in addition to other components at varying program levels. The program also supplies the instructor with practice baskets and lightweight beginner friendly discs to ensure a positive learning experience (edgediscgolf.org). Although Innova, the largest manufacturer of discs and other equipment, has lead the disc golf
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In recent years, public parks have received increased attention to improve accessibility to physical activity facilities. Godbey and Mowen (2010) explain how parks and recreation is one market in terms educational opportunities, newer disc golf companies such as Dynamic Discs have also put similar entries on the market by offering their own educational disc golf sets (dynamicdiscs.com). It is quite common to find a sharing and exposure attitude across the entire disc golf landscape, and it starts at the manufacturers that do the most to grow the sport.

In order to combat the obesity epidemic and move in a new direction, we must provide outlets for change, both for adults and children. Undoing the damage done requires modifying lifestyles and maintaining those changes for years, and the later in life that people remain obese, the less likely it is that they will make and sustain those changes (Biro & Wien 2016). Many foundations and organizations around the country are working to improve public health through diet and exercise, but the benefits of these are difficult to measure and even harder to prove. Projects that require sustained funding can find themselves in a difficult spot when benefits are hard to quantify.

As the wealth gap manifests itself in different ways more people will need to use public resources as a means of exercise, and if we do not increase the availability of resources for them to do so we will effectively exclude poor whites and minority families from being able to take corrective action, regardless of their drive or desire to do so. The phrase, “exercise is the cheapest form of healthcare” will only ring louder as a generation of disenfranchised and impoverished children grow up with obesity related health problems without ever having had the resources to prevent, treat, or cure their symptoms.

The Accessibility of Disc Golf

In recent years, public parks have received increased attention to improve accessibility to physical activity facilities. Godbey and Mowen (2010) explain how parks and recreation is one
of the most cost effective ways to generate increased physical activity and provide venues for
structured sports activities. Parks and Recreation departments across the United States manage
over 108,000 parks and 65,000 indoor facilities. This is a massive network of exercise venues
that is not getting the proper attention or funding. From 2010 to 2015, Parks and Recreation
departments experienced a $48 billion shortfall in funding. Proximity to workout location is one
of the most significant factors in getting people to exercise with consistency. Studies have shown
that even differences as little as a one-mile proximity versus a half-mile proximity can have an
impact on frequency of park usage. Therefore, it is of critical significance to reduce venue
proximity, especially amongst communities of lower socioeconomic status.

In a survey of middle age and older adults, 38% of respondents reported using a local
park at least once a week. 85% reported having visited a park at least once in the last year. In a
survey completed nationally by the Youth Risk Behavior Surveillance System, finding reported
that a $10 per capita spending increase saw vigorous exercise by girls increase by a third of a day
per week. It also showed that increased spending brought about an increase in strength training
exercise by both genders. Simply put, providing nearby venues for youth and adults to exercise
through public spending and initiatives is an incredibly cost-effective preventative health care
option.

We need to make use of our natural resources to improve the public’s options for exercise
and reincorporate exercise as a normal component of everyday life. If we do not we will continue
to see a decline in many aspects of our public health and we will be a weaker nation as a result.
According the US Department of Health, annual per capita healthcare costs are expected to hit
$13,000 by 2018, up from $9,000 in 2009 (Godbey and Mowen 2016). This kind of annual
expenditure is damaging to economic consumption and a sign of an overall decline in the health
and the quality of life of the average American. In comparison, the costs of providing public,
easily accessible outlets for individuals to improve their physical health is a mere pittance.

By funding disc golf course installations to provide an affordable and easy to play outlet
we can make a cost-effective use of resources to enable exercise that is accessible to people of all
health levels and transferrable to communities nationwide. Disc golf successfully offers both
enough difficulty to challenge athletes and enough ease to be played by almost any able-bodied
person. Participants within the sport range from elementary students to senior citizens, as well as
those whose obesity prevents them from participating in higher impact and higher intensity
sports. Unlike ball golf, most courses are located in public parks and are free to play, excluding
the cost of transportation to and from the course. Entry costs are also comparatively low as discs
are priced from as cheap as $5 for used discs to $20 for premium plastic discs. While avid
tournament players can carry as many as 20-30 discs, casual players can start out with only 1 to
3. For the cost of an economically priced golf bag or baseball bat, a new player can already have
their first set of discs and still have gas money left to get to a course. This cost structure gives
disc golf easy accessibility and a much lower level of minimum investment to play than most
sports.

The cost of a course to the public is a similar story. On average, disc golf courses are
cheaper to install and maintain than other sports facilities such as baseball fields. Premium
quality competition level baseball fields can start at $300,000 compared to under $7,000 for a
disc golf course. After installation, it is general practice for local disc golf clubs to accept the
primary responsibility in course care, from tree trimming to erosion prevention with help coming
from parks and recreation departments depending on the community’s relationship with disc golf. Course work days are a cornerstone of club activities that help maintain public areas.

Another item to consider is that while other sport facilities usually require development of flat, open areas, disc golf seeks to make use of land that is often undesirable or uneconomical for other purposes. Installing a course in these areas will manage to give a purpose to underutilized land and in some cases, can improve safety via increased foot traffic. Thus, it helps the case for disc golf that it’s growth does not conflict with that of other sports.

Once a course is installed, disc golfers have the option of playing with little to no organization, reducing the barriers to entry for people with highly constrained schedules. Golf courses usually require a tee time and group or team sports require organized meeting times as well as a league of organized participants. These increase the cost of participation in group sports due to usage fees, referees, and costs to run the venue or league. These costs can form another barrier to entry for individuals and families who cannot afford expenditures for every sport outing. In comparison disc golfers can play by themselves or friends with no schedule and little to no cost. Most courses are free to enter, but pay to play course that do exist charge, on average, no more than $5 for top level facilities. Simultaneously, the installation of a disc golf course enables organized play in the form of leagues ran by local clubs. At no further cost to the city, clubs can run weekly events that provide competitive output and foster a sense of community.

This ability to choose between organized and free play gives players more availability to make use of the course however they want to and increases the breadth of disc golf’s appeal. The thousands of possibilities of how and where to play allow uniqueness to coexist with familiarity. It is for these reasons that I believe the rise of disc golf is something that should be an inviting
use of resources by parks and recreation departments across the United States.

**Motives for playing sport**

Understanding why people choose to play sports is an important component of promoting physical activity and maintaining continued participation. Under the Contesting Theory verified by previous research, athletes in competition can interpret their understanding of the sport either as a war or as a partnership with their competition (Funk, Shields and Bredemeier 2009, 2011). This means that people can simultaneously have different motivations for playing sport. Funk, Shields and Bredemeier (2011) surveyed over 500 college athletes on their self-assessment, motivation, and their internal understanding on the nature of competition. Specifically, the athletes were asked questions on factors of sportspersonship, motivational factors, and their belief on whether they saw competition as a war or a partnership between their competitors. Results showed that higher levels of autonomous motivation and partnership perception both correlated positively with increased sportspersonship. As opposed to team sports available to diverse age groups such as basketball or soccer, in disc golf you only compete against the course and your perception of ability. While deciding to play against your friends or in a tournament does create a competition driven aspect, at no point does the nature of the game require you to play against your peers. Ideally, disc golf can promote autonomous motivation and sportspersonship as well as facilitate the partnership point of view even at the competitive level.

In this paper, I will hypothesize that across experience levels, players can find a wide enough variety of motivations to fit their own self-driven needs. Keshtidar and Behzadnia (2017) surveyed 268 Iranian student-athletes about their motivation factors and desire to continue playing their sport of choice after college. The contrasting motivations were social external
motivations versus autonomous motivation, as well as task orientation versus ego orientation. The authors found a higher self-reported likelihood to continue the sport amongst players who more strongly reported autonomous motivations as well as task over ego orientations. The sportsman who plays to improve and challenge himself or herself to complete new feats of skill is more likely to maintain his or her interest in the sport longer after the major frame of competition has come and go. The self-driven pursuit of improvement and mastery of skill that disc golf offers is a factor that has proven to keep people playing sports long term (Keshtidar and Behzadnia 2017).

As a result, goal setting and achievement motives can be entirely implicit should the player decide to frame it as such within their mental perception of the game. Gropel, Wegner and Schuler (2017) found a strong correlation between implicit achievement motive and frequency of sports participation. In comparison, no correlation was found between explicit achievement motives, such as social pressure or group approval, and frequency of participation. Players need to be able to find motivations for play that come from their own drive to succeed. Setting a new personal record at a course, throwing a longer distance than before, or boosting one’s PDGA player rating are all self-driven motives that only require measurement against one’s own past performance. With this framework in mind, it is more likely that players will stick with the sport and continue to pursue new goals as opposed to a dynamic that features more external pressures to achieve or perform (Gropel, Wegner, and Schuler 2016).

Disc golf also holds weight under the construction of achievement theory, the concept that mastery of skills and progression towards achievements will motivate competitors to continually work towards the next goal (Gardner, Vella and Magee 2017). Under this framework,
participants and competitors are described as having two different kinds of beliefs, entity and achievement, regarding their competence, achievement, and consequently their enjoyment. Gardner, Vella and Magee (2017) found that enjoyment of participation is framed as the highest indicator of continued participation. Players who self-reported a higher focus on mastery and incremental progress expressed greater enjoyment and greater intent to continue playing their sport long-term. In comparison, players who self-reported entity beliefs, the idea of themselves as a stable and of an unchanging level of skill reported lower levels of enjoyment and intent to continue. Athletes in this state of mind tend to think of their skillset as a consistent and unchanging gift or curse. Similarly, players focused on achievement as a defining motive over incremental improvement found themselves experiencing lower enjoyment and content.

Anyone who has played golf for extended periods of time knows that there is no perfection in it, only improvement. One day of success or achievement does not equal a lifetime of success or even competence. Within disc golf there is more room for incremental achievement and understanding. The division of players by rating ensures that a player can almost always find themselves matched up against competitors at or near their skill level. While this competition framework may seem contradictory to the beneficial increment belief system that I described above, what it means in practice is that players always have new chances to compete and perform in an enjoyable setting. If a player can successfully frame this venue for competition under the incremental framework, he or she has the potential for a lifelong pursuit of hard work, progress, and fun.

Players can make the entry into tournament disc golf with little to no experience and still find themselves matched in competition that is fun yet challenging. As the player progresses
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their natural ability they can move up in divisions and compete in larger tournaments. Thus, the game creates an endless treadmill of improvement that only ends when the player decides he or she is satisfied with their progress. When we factor in all the other elements of community, natural exposure, and accessibility, we have a template for widespread appeal that is only limited by the game’s ability to gain exposure for itself. This combination of factors serves to create an immersive experience that for which the player’s motivations can change, grow and develop over time.

Recreation Over Competition

Once people have been introduced to a sport and familiar with it, balancing interest and activity level are important to long-term involvement. However, the competitive nature of sports participation in the United States puts a large burden of financial and emotional stress on participants and their families. Many sports have shifted over to a travel league model, where higher caliber athletes move up a ladder to more expensive clubs, training harder and traveling further to compete at higher levels. Athletes who succeed in this system to push themselves and become professional athletes become role models for those following behind them. The lionization of sports champions and their success puts the newest generation under more stress to succeed than the last.

As a result, sports specialization is happening more often and earlier in the lives of kids. Rather than trying different sports over time or competing in different sports with the season, we have seen an increase in the number of athletes who only train for one sport year round (State of Play 2016). This imposes a higher risk of overuse injuries that may cause physical developmental issues later in life. In comparison, rotating through different sports year round
changes the stressors put on the athlete’s body and allow them to recover and develop in
different direction (State of Play 2016). The other risk of specialization is a heightened chance of
athlete burnout and attrition. Because of the United States’ sports model, it is most likely that the
later in life that athletes partake in the sport, the more competitive the environment becomes.
While this model is useful in developing the next top talents, it fails at the ultimate goal of
maintaining active and healthy lifestyles as kids grow into adults, especially for those who do not
show the promise and success of top level athletes.

Temple and Crane (2016) formally assess the impact of this environment in a review of
14 different studies completed amongst drop out and active soccer players ranging from ages 6 to
17. In this review, they found participation rates went consistently down as age went up, with 21
percent participation at 6, 14 percept participation at age 12, and 9 percent by age 17. Studies
analyzed reported season to season dropout ranging anywhere from 18 percent to 60 percent in
some cases, meaning that athletes in the survey did not return for the following season. The most
commonly studied and cited reasons for dropout included lower self perception of competence
and lack of fulfillment from play. Several studies also cited the added stress of travel and season
length as significant factors (Temple and Crane 2016). All of these factors derive from the
competition driven environment, and eventually either outweigh or eliminate the original
motivations that engaged participants in the first place, mainly the opportunities to bond with
teammates and friends, enjoy the sport and feel physical autonomy and competence. Once these
factors are not a part of the participant’s sport experience, it is all but certain that enjoyment and
will to participate will vanish.

In a more qualitative and retrospective look at this problem, Fraser-Thomas, Côté, and
Deakin interviewed a total of 20 swimmers, 10 dropouts and 10 currently engaged, to survey what factored into their decision making process. Engaged athletes frequently referenced their option and time to pursue other opportunities and support from their parents to do so. Other significant factors included good relationships with coaches and peers and a delay in specialization, with engaged swimmers more frequently experiencing greater variety in their sports options and greater focus on personal over competitive developments. In comparison, dropouts expressed sentiments of feeling trapped and excluded, citing lack of time for other opportunities, coaching favoritism, and early peak performances. Dropouts also expressed difficulties in dealing with coaching from parents and pressure when considering dropping out.

When examining this study, we see the damage that competitive environments put on athletes to specialize, dedicate their time and freedom, and perform well enough to garner success and admiration at every new level. Those who cannot do all three to the highest standard find themselves left out of the experience and no longer motivated through enjoyment.

In comparison, one would struggle to find any of these pressures within the realm of casual disc golf. For many who choose to play, plateaus and peaks are the nature of the game, and not something to resent. There is no requirement to get better other than those that player chooses to impose on themselves, and even in the most competitive of environments the elements of enjoyment are still derived from the most innate aspects of the disc golf experience. Simply enjoying the time to take walks outside with friends and family while throwing discs is the most important component of the average player’s experiences.

In the landscape of traditional sports where the nature of competition, dedication and specialization grows more absurd and continues to exclude and burnout the majority of
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participants, the pressure free environment of disc golf is something truly special. There is no requirement to train or practice more often than what feels necessary, and skill level does not determine enjoyment. Disc golf does not require specialization, and players can come back to it quite easily after long breaks. Whether a player is going to play their first game ever or their fourth game this week, they are still able to enjoy the most critical parts of the experience and have a good time.

Methods

Research of player motivation will be done through surveying players within the local and online community about why they play disc golf and to what factor they attribute different reasons for playing. Online communities such as Facebook groups, disc golf course review forums, and r/discgolf are central hubs of disc golf involvement, knowledge and discussion. Thus, sampling from these groups is one of the easiest ways to get an accurate picture of players with long term passion for the sport. In my experience, most people play for a variety of reasons that can change over time, so getting a variety of experience levels and demographics will be more informational in identifying long term player motivations.

Research Design

In order to quantify the appeal of disc golf, we need to survey which motivations appear at the highest intensity across a statistically significant sample. This was done using a rating scale model survey, adapted from prior research completed in Focht’s 2009 publication. The scale referenced asks respondents to rank the personal validity of self-assessment questions on a 5-point scale ranging from Strongly Disagree to Neutral to Strongly Agree. Each answer is given a numerical value for which the totals are aggregated to create an average intensity level for each
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motivational factor. The academic basis for this scale was roughly based on the Contesting Orientations Scale created by Funk, Shields, and Bredemeier in their research. Responses were collected using SurveyMonkey after obtaining Institutional Review Board approval.

**Sampling**

Before surveying began the desired sample size had been set, modestly, at around 75 players of ranging experience levels, ideally including 25 or more inexperienced, 25 or more moderately experienced players, and 25 or more experienced players. The idea behind this being that separation by experience would give a clearer picture of the most relevant factors to inspiring long term involvement with the sport. As always, the disc golf community was quick to lend a hand to a fellow player. By the end of the first day of data collection the survey was closed with 1,028 responses. Of these responses, 111 claimed to have little to no experience, 738 claimed to be moderate experienced, and 176 claimed to be highly experienced. While the desired proportions were a little off, there was more than enough data from the sample size to draw conclusions about the motivations across groups. Due to the disjointed nature of the disc golf community and the collection methods used, there were some probable issues with the sampling that likely impacted the demographics and overall results. Because of the sampling method used, there was a greater representation of tournament and club level players as opposed to casual players that make up much of the disc golf population. As a result, there is a probable bias in the response pool toward players of a higher intensity and experience level than the population average.

**Instrumentation and Interview**

The Survey Consists of 18 questions that participants could complete directly from their
None of the questions request participants for any information that could be used to personally identify themselves. Seven questions are regarding demographics, ten rating scale questions, and one open-ended catch all for unlisted response types. The demographics questions ask participants for their gender, age group, experience level, membership in the PDGA, membership in a local club, and yearly spending on disc golf. Ages were grouped by ranges of under 18, ages 18 to 22, 22 to 30, 31 to 39, and over 40. PDGA Membership was separated by active membership, inactive (expired) membership, and no membership. Local Club membership was based on a simple binary of membership or non-membership. Yearly spending on disc golf was grouped in ranges of under $100, $101-$500, $500-$999, and $1000 and over.

The rating scale questions asked participants how much a certain factor motivates them to play disc golf and rank the factor with one of 5 responses: Negatively impacts my motivation (-2), Would rather do without but no impact (-1), No opinion (0), Important to my motivation (1), Very important to my motivation (2). The motivations listed for rated response where: being outside, getting exercise, demonstrating mastery of skill, making progress in my mastery of skill, defeating my peers in competition, becoming a professional/touring pro, feeling physically capable of playing a satisfactory level, being part of a community, affordability, and playing whenever I want/schedule allows. The response weights were averaged across the sample to create an average rating for each motivation factor. Under this framework, a perfect positive average would be a 2.0 and a perfect negative average would be a -2.0. Survey response and design was completed using survey monkey.

**Data Analysis**

Once results are collected, the motivation factors were averaged to create a point value
based on the average of all the rated scores. Once these averages were completed, mean comparisons of motivation factors across the demographics groups were completed for age, experience level, and frequency of play. This comparison would allow us to see how the intensity of the surveyed motivation factors varied across different demographic groups. Due to the lack of size women’s sample, mean comparisons could not be justified across the gender demographic. The means across demographics were then used to calculate a range for these values when comparing groups. This measure could be used in order to understand which factors were most common or different across varying groups.

**Results**

In total, there were 1028 responses with some respondents choosing to skip certain questions. For demographics, all questions had at least 1000 responses in total, far surpassing the desired and expected sample size. Data collection was completed within a single day after soliciting player participation on social media and online disc golf forums.

<table>
<thead>
<tr>
<th>Table 1) Gender</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>Responses</td>
<td>991</td>
<td>29</td>
<td>1020</td>
</tr>
<tr>
<td>Percentage</td>
<td>97%</td>
<td>3%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Respondents were 97% Male and 3% Female as shown in Table 1. This is roughly consistent with a 2016 PDGA demographics report that shows a Male to Female ratio of 92.4% to 7.6% (Appendix 1). Because of this disparity, this was the only demographic for which a mean comparison of the motivation factor ratings was not useful for interpretation.

| Table 2) Age |
For Table 2, age group 22-30 had the highest response rate with 49.46%, followed by 30 to 39 with 27%. Age group 18 to 22 ranked third with 15.8% of responses, followed by the over 40 age group with 6.34% and the under 18 age group with 1.37%. 92% of responses were from participants aged 18-39. It is likely that the use of social media and internet forums resulted in a younger skew in age demographics. In comparison to last year’s PDGA demographics report, we see a substantial skew towards the central age ranges of 22-30 and 30-39. In the official report we see a much higher representation of the over 40 age group as opposed to the results collected in this research (Appendix 1).

### Table 3) Frequency of Play

<table>
<thead>
<tr>
<th>Frequency</th>
<th>≤ Once/month</th>
<th>once/week</th>
<th>2-3 times/week</th>
<th>4+ times/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>113</td>
<td>322</td>
<td>445</td>
<td>147</td>
</tr>
<tr>
<td>Percentage</td>
<td>11%</td>
<td>31.35%</td>
<td>43.33%</td>
<td>14.31%</td>
</tr>
</tbody>
</table>

With respect to frequency of play, found in Table 3, 31.35% of respondents reported playing at least once a week. The highest self-reported frequency was 2-3 times per week with 43.33% of overall responses. Lifestyle most likely contributed to the other groups, with 14.31% having the free time to play 4 times per week or more, and 11% only having the opportunity to play once a month or less. Because the venue for collection were disc golf focused, it is likely that player frequency within the sample is higher than the true average of player frequency.
factoring in for reduced frequency of play for casual players.

### Table 4) Experience Level

<table>
<thead>
<tr>
<th>Experience</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>111</td>
<td>738</td>
<td>176</td>
</tr>
<tr>
<td>Percentage</td>
<td>10.83%</td>
<td>72.00%</td>
<td>17.17%</td>
</tr>
</tbody>
</table>

As shown in Table 4, 72% of players described themselves as moderately experienced, with 11% reporting little to no experience and 17% describing themselves as highly experienced. This could have several reasons for returning as such. One being that moderate experience is most likely to catch as many respondents as possible without creating a definitive frame for experience level. The other being that disc golf’s recent explosion in popularity has brought in a new generation of players within the last four to five years that play competitively but are not as experienced as more long-term players. The most likely explanation is that the collection method of using disc golf based venues for collection resulted in a skew towards players more engaged in club and tournament play as opposed to casual play.

### Table 5) PDGA Membership

<table>
<thead>
<tr>
<th>PDGA</th>
<th>No</th>
<th>Yes, Active</th>
<th>Yes, Inactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>676</td>
<td>272</td>
<td>79</td>
</tr>
<tr>
<td>Percentage</td>
<td>65.82%</td>
<td>26.48%</td>
<td>7.69%</td>
</tr>
</tbody>
</table>

Referring to Table 5, roughly 66% of respondents were not PDGA members in any form, while 26.5% were active PDGA members and the remaining 7.5% were inactive members at the time of the survey. Considering that sampling design of this survey would more likely attract players at a higher intensity level, it is likely that the ratio of PDGA to more casual non-PDGA members...
players is even higher than this percentage suggests.

**Table 6) Local Club Membership**

<table>
<thead>
<tr>
<th>Local Club</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>444</td>
<td>579</td>
</tr>
<tr>
<td>Percentage</td>
<td>43.4%</td>
<td>56.6%</td>
</tr>
</tbody>
</table>

Local clubs had a higher level of participation than the PDGA with 44% reporting some kind of involvement in a local organization as opposed to 56% who did not as shown in Table 6. This figure is also likely skewed towards higher involvement due to collection methods using the facebook page of the local club and the increased player intensity level that this survey would attract.

**Table 7) Yearly Expenses**

<table>
<thead>
<tr>
<th>Yearly Expense</th>
<th>&lt;$100</th>
<th>$101-$500</th>
<th>$501-$999</th>
<th>$1000+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>288</td>
<td>551</td>
<td>128</td>
<td>58</td>
</tr>
<tr>
<td>Percentage</td>
<td>28.10%</td>
<td>53.76%</td>
<td>12.49%</td>
<td>5.66%</td>
</tr>
</tbody>
</table>

With respect to Table 7, yearly expenses, 28% of respondents reported spending less than $100 on disc golf annually. The majority of respondents, about 54%, reported spending between $101 and $500 per year. About 12.5% reported spending between $501 and $999 per year on their disc and tournament related expenses. Only 5.66% reported spending over $1000 annually on disc golf, but I would personally venture that the strictest accounting practices were not followed in keeping any of these expense amounts truly accurate.

**T.8) Motivation Factors**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Negatively impacts (-2)</th>
<th>Not in Favor (-1)</th>
<th>No opinion</th>
<th>Important (1)</th>
<th>Very important</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
</table>
In the motivation factors part of the survey, found in Table 8, being outside had the highest rated average with a score of 1.5. Mastery of skill came in a close second with a score of 1.47, followed by convenience of play with a score of 1.41, and feeling physically capable with a score of 1.25. Scores overall were fairly elevated when considering that a perfect score for this scale would be a 2.0. Only three factors failed to reach a rated average of at least 1.0: being part of a community (0.75), deflecting my peers (0.49), and becoming a touring professional (-.18). It
is worth noting that becoming a professional was the only factor that had a negative rated average. One could argue that the survey failed in creating differentiation between levels of rating since arguably, almost all of these factors are going to be positive to almost all responses. What I aimed to capture here was not the positivity, but the intensity of these factors. As we can see, very few questions received negative responses with any amount of significance.

**Table 9) Mean Comparison of Motivation Factor Across Age Groups**

<table>
<thead>
<tr>
<th>Factor/Age</th>
<th>&lt;18</th>
<th>18-22</th>
<th>23-30</th>
<th>30-39</th>
<th>40+</th>
<th>Raw Avg.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being Outside</td>
<td>0.93</td>
<td>1.33</td>
<td>1.53</td>
<td>1.55</td>
<td>1.52</td>
<td>1.50</td>
<td>0.62</td>
</tr>
<tr>
<td>Making Progress in my Mastery of Skill</td>
<td>1.36</td>
<td>1.47</td>
<td>1.54</td>
<td>1.39</td>
<td>1.24</td>
<td>1.47</td>
<td>0.30</td>
</tr>
<tr>
<td>Convenience</td>
<td>1.14</td>
<td>1.46</td>
<td>1.43</td>
<td>1.37</td>
<td>1.40</td>
<td>1.41</td>
<td>0.32</td>
</tr>
<tr>
<td>Feeling physically capable</td>
<td>0.86</td>
<td>1.25</td>
<td>1.24</td>
<td>1.30</td>
<td>1.11</td>
<td>1.25</td>
<td>0.44</td>
</tr>
<tr>
<td>Getting Exercise</td>
<td>0.57</td>
<td>0.95</td>
<td>1.13</td>
<td>1.29</td>
<td>1.43</td>
<td>1.15</td>
<td>0.86</td>
</tr>
<tr>
<td>Affordability</td>
<td>0.71</td>
<td>1.10</td>
<td>1.08</td>
<td>1.04</td>
<td>0.83</td>
<td>1.05</td>
<td>0.39</td>
</tr>
<tr>
<td>Demonstrating Mastery of Skill</td>
<td>0.71</td>
<td>0.92</td>
<td>1.11</td>
<td>0.99</td>
<td>0.94</td>
<td>1.03</td>
<td>0.40</td>
</tr>
<tr>
<td>Community</td>
<td>0.50</td>
<td>0.70</td>
<td>0.71</td>
<td>0.84</td>
<td>0.87</td>
<td>0.75</td>
<td>0.37</td>
</tr>
<tr>
<td>Defeating my Peers in competition</td>
<td>0.71</td>
<td>0.61</td>
<td>0.53</td>
<td>0.42</td>
<td>0.21</td>
<td>0.49</td>
<td>0.50</td>
</tr>
<tr>
<td>Becoming a professional</td>
<td>-0.07</td>
<td>-0.01</td>
<td>-0.16</td>
<td>-0.33</td>
<td>-0.22</td>
<td>-0.18</td>
<td>0.32</td>
</tr>
</tbody>
</table>

When we divide the motivation rated averages across age groups in Table 9 several differences become apparent. Being outside scored stronger amongst age groups over 23, with all three of the groups included in this description ranking higher than the average. Getting exercise scored consistently stronger as age went up, starting at 0.57 for the under 18 group and reaching 1.43 for the over 40 age group. Mastery of skill and progress of skill both peaked in the 22 to 30
age range. Interestingly enough, the only factor for which the under 18 age group reported a higher rated average than the raw average and the rest of the age groups was defeating my peers in competition. For this factor, rated average went down consistently as age went up. Becoming a touring pro was the only negatively rated factor, but was rated higher in younger age groups that had more time for progress towards such goal. Feeling physically capable was relatively flat with a slight increase in intensity across the 22 to 30 and 31 to 39 age brackets. The rated average for community went up incrementally with each age bracket, starting at 0.5 for under 18 and peaking at 0.87 for the over 40 group. Affordability was most significant for the 18-22 group with a score of 1.10 and 23-30 with a score of 1.08. Excluding the under 18 group, convenience was relatively flat across age groups with all other age groups reporting within 0.1 points of the raw average. The ranges for this mean comparison were larger than other comparisons, mainly due to the deflated average levels across the board for the under 18 age group.

Table 10) Mean Comparison of Motivation Factor Across Player Frequency

<table>
<thead>
<tr>
<th>Factor/Frequency</th>
<th>&lt; once/month</th>
<th>once/week</th>
<th>2-3 times/week</th>
<th>4+ times/week</th>
<th>Raw Avg.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being Outside</td>
<td>1.41</td>
<td>1.50</td>
<td>1.51</td>
<td>1.53</td>
<td>1.50</td>
<td>0.12</td>
</tr>
<tr>
<td>Making Progress in my Mastery of Skill</td>
<td>1.06</td>
<td>1.39</td>
<td>1.55</td>
<td>1.68</td>
<td>1.47</td>
<td>0.62</td>
</tr>
<tr>
<td>Convenience</td>
<td>1.16</td>
<td>1.43</td>
<td>1.42</td>
<td>1.55</td>
<td>1.41</td>
<td>0.39</td>
</tr>
<tr>
<td>Feeling physically capable</td>
<td>0.97</td>
<td>1.17</td>
<td>1.3</td>
<td>1.45</td>
<td>1.25</td>
<td>0.48</td>
</tr>
<tr>
<td>Getting Exercise</td>
<td>1.01</td>
<td>1.10</td>
<td>1.20</td>
<td>1.24</td>
<td>1.15</td>
<td>0.23</td>
</tr>
<tr>
<td>Affordability</td>
<td>1.00</td>
<td>1.11</td>
<td>1.07</td>
<td>0.90</td>
<td>1.05</td>
<td>0.21</td>
</tr>
<tr>
<td>Demonstrating Mastery of Skill</td>
<td>0.61</td>
<td>0.93</td>
<td>1.11</td>
<td>1.36</td>
<td>1.03</td>
<td>0.75</td>
</tr>
<tr>
<td>Community</td>
<td>0.32</td>
<td>0.69</td>
<td>0.81</td>
<td>1.03</td>
<td>0.75</td>
<td>0.71</td>
</tr>
</tbody>
</table>
Disc Golf as a Public Health Option

When dividing the scores across player frequency in Table 10, we notice at face value that for every factor except for affordability, rated average of motivation factor intensity showed a positive correlation with frequency of play. This is a helpful finding as it suggests that players who feel their motivations more intensely play disc golf more often. Players who played 4 times per week or more were the only group that reported positive rated averages for becoming a touring pro and, not surprisingly, an average under 1.0 for affordability. Being outside (0.12), getting exercise (0.23), and affordability (0.21) had the smallest range of rated average values across all groups. This makes sense when considering that these are motivations that can be felt regardless of frequency of play. Progress of mastery (0.62), demonstration of mastery (0.75), becoming a professional (0.73), and community (0.71) had the largest ranges amongst the motivation factors listed. Also sensible since all of these factors would be felt more strongly by those who play at the competitive and club level than those who play more casually and with lower frequency.

<table>
<thead>
<tr>
<th>Factor/Experience</th>
<th>Little to No Experience</th>
<th>Moderately Experienced</th>
<th>Highly Experienced</th>
<th>Raw Avg</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defeating my Peers in competition</td>
<td>0.33</td>
<td>0.36</td>
<td>0.56</td>
<td>0.71</td>
<td>0.49</td>
</tr>
<tr>
<td>Becoming a professional</td>
<td>-0.45</td>
<td>-0.37</td>
<td>-0.14</td>
<td>0.28</td>
<td>-0.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.73</td>
</tr>
</tbody>
</table>

Table 11) Mean Comparison of Motivation Factor Across Experience Level
Disc Golf as a Public Health Option

<table>
<thead>
<tr>
<th>Disc Golf as a Public Health Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defeating my Peers in competition</td>
</tr>
<tr>
<td>Becoming a professional/touring pro</td>
</tr>
<tr>
<td>Feeling physically capable</td>
</tr>
<tr>
<td>community</td>
</tr>
<tr>
<td>affordability</td>
</tr>
<tr>
<td>convenience</td>
</tr>
</tbody>
</table>

The experience level mean comparison found in Table 11 also tells a similar story. As experience level goes up across the three groups, so does every rated average, again, with the exception of affordability. The categories with the lowest ranges were, getting exercise (0.08), convenience (0.04), affordability (0.12), and being outside (0.19). These are common motivations that remain consistent across all levels of involvement. The largest ranges in this table also belong, mostly to same experience driven factors as those with the largest ranges Table 10. These are demonstrating mastery of skill (0.63), becoming a touring pro (0.51), community (0.47), with defeating my peers (0.54) replacing mastery of progress (0.34) in the top four highest ranges.

**Discussion**

Disc golf provides a lot of different benefits to the people who play it. To the more experienced, competitive, and experienced players in their physical prime it is the chance to improve their game through practice and tireless dedication. To the players who choose to involve themselves in the tournament and local club scene, it is a community of fun and friendship like no other. From the first game anyone plays, it is a fun walk outdoors at little to no
cost. This dynamic is why disc golfers are so intent on sharing the game with anybody who will listen. Most of us have a feeling that the game can easily lure in anyone who gives it a chance. Having brought many people to their first round, I can personally say that it is plainly visible when someone has caught the proverbial “bug”.

The most immediately accessible part of this experience is outdoor exercise. People need outdoor exposure on a regular basis to promote physical and mental health (Maier and Jette 2016). For many players, disc golf fits the activity model for mental health benefits as discussed in Maier and Jette’s 2016 piece. It is the chance to engage with one’s surroundings and feel empowerment in the outdoor environment. It gives players the chance to be in a friendly and trusting environment, as well as contribute to a community when they feel empowered to do so. More importantly, it keeps them coming back for multiple experiences of these tangible benefits.

Across age groups, people are more likely to enjoy and repeat physical activity when it is both enjoyable and outdoors, as shown in previous research and my findings on player motivations (Focht 2009, Gardner et al 2017). To participants, outdoor exercise feels more like play and less like work as compared to indoor exercise, something that experts note as one of the most important factors in getting kids moving again and keeping active in their long-term lifestyle (State of Play, Focht 2009). As adults age and move forward their careers, the time available for outdoor exercise decreases, making the importance of dedicating time to outdoor exercise that much more critical. In Table 9, there is an upward trend in the rated average value of both the being outside and getting exercise factors as age went up, with adults over 40 reporting the highest averages. Whether a player is at the peak of their disc golf game or just starting out, these factors only grows more important as players reach later in life.
In Table 11, the same upward trend for being outside and getting exercise is found with respect to experience levels. In general, highly experienced players had the strongest rated average for every factor except affordability. On one hand, it could be that these motivations grow stronger as the player’s relationship with disc golf strengthens. However, this also suggests that players who feel these motivations more strongly are more likely to play disc golf long term. While determining the direction of causality is a little unclear, what this does tell us is that higher rating of these motivation factors can easily correlate to deeper immersion in disc golf, or “catching the bug” described earlier.

The most critical part of increasing the benefit of discovering and continuing any new form of exercise is repeatability. To be able to enjoy the offering of a sport repeatedly and often without losing interest is a significant part of the benefit that disc golf offers. In Table 10, motivation factors peaked across the board for players who played four times per week or more. The difference for players who played two to three times per week was not substantial either. Getting players to want to be at the course as often as possible, without dreading the necessity of the exercise it offers, is the gift that disc golf offers.

In comparison to the increasingly competitive dynamics, rising costs and ever increasing barriers to entry seen in more traditional sports, the focus and appeal of disc golf is more likely to appeal to those who seek enjoyment over competition. All too often, athletes of all ages invest themselves heavily in sports that require a level of dedication and investment that will eliminate the initial enjoyment they found in said sport. For disc golf, the risk of burnout is also comparatively low, considering that the minimum investment is tremendously smaller than other sports that require daily practice and training. When burnout does occur for passionate players,
nothing is lost in deciding to take a break. The discs and the park will still be there when players decide to return.

When we exclude the sentiments of the under 18 age group for whom, not surprisingly, motivational factors were more involved in the game’s competitive and mastery aspects, we notice that being outside and getting exercise were almost always the highest in rated average across the age group, experience level and player frequency mean comparisons (Table 9, Table 10, Table 11). It doesn’t matter how long you’ve been playing or how often you play, these facets of disc golf will always be present and are always a good reason to play.

Should a player find themselves wanting more out of their disc golf experience, as many of the survey respondents did, there is no shortage of a competitive opportunity. Local clubs primarily exist to run leagues and tournaments, with ratings based divisions allowing players to compete within their range of capabilities. This becomes more significant to players as their experience level goes up and they become more familiar with their local scene. Players who play more often and gain more experience find greater importance in participating in their local clubs and scenes (Table 10, Table 11). The same rings true as players get older (Table 9). As we saw in T.8, the motivation factors that rated highest with respect to competition was not defeating peers, becoming a professional player, or even demonstrating mastery, but simply making progress. Players want to feel with every outing that they have made incremental improvement on their game.

In the experience level mean comparison found in Table 11, making progress still outranks any other competition related factor even as experience levels increase. Following the dynamic demonstrated by Gropel, Wegner, and Schuler, players who set their own implicit goals...
are more likely to have a higher frequency of play as displayed in Table 10. On the average, players to do not motivate themselves with social pressures or explicit motivations. One of the most frequently heard expressions in golf and disc golf alike is that a player only competes against themselves and the course. Under Keshtidar and Behzadnia’s motivation framework of implicit goal-setting, this is a good sign for disc golf’s longevity for both individuals and the sport as a whole. When you only have your past efforts to beat, a player’s work for progress is only done they have had enough.

Whether players are enjoying casual motivations or full competitive immersion, these diverse experiences are significant when we consider the issues this country faces handling its obesity crisis. Across all age groups, obesity rates are rising and sports participation and exercise rates are going down (State of Play 2016). On its current path, the per capita healthcare expenses of Americans are set to continue rising as sedentary lifestyles and poor diet manifest themselves in the form of heart disease, diabetes, and other obesity related illnesses (Biro and Wien 2010). If we are to find a way out of this ongoing crisis, availability and convenience of resources are of critical importance. By providing something for people with different personalities, physical capabilities, motivational bases, and levels of resources, disc golf has a strong potential to diversify its base with proper exposure and convenience of access.

Will disc golf ever replace the current set of team sports that parents and health advocates reach to when looking for solutions to our obesity crisis? Even with the fervor and appreciation I have for this game, I doubt it. But as I’ve argued earlier in this paper, it doesn’t have to. What disc golf has that other sports do not is the ability to coexist with other sports, both systemically within America’s numerous public parks, and individually for those who want a fun alternative
during their off seasons and down time. It has been previously established, both in the survey and in prior research, that convenience of access can be a deciding factor in someone’s frequency of engaging in physical activity (Table 8, Godbey and Mowen 2010). Across all the demographic groups, players appreciate the ease of playing disc golf with little to no hassle, ranking it as the third strongest motivation for playing (Table 8). This convenience of access, coupled with low costs of access and minimal requirement of personal investment means that disc golf can exist outside the high cost, high strain, and high exclusivity environments that traditional sports exist within today. The low cost nature of the sport means that individuals and entire families can play on and off without feeling like entry costs and external pressures require them to get their investment’s worth. Increasing this access and improving proximity by installing more courses, with proper knowledgeable course design that allows disc golf to successfully coexist with other park functions, is one more way to offer convenient and fun physical activity to a population that needs as many options as possible to solve its current set of health problems.
References


## Appendix

### Appendix 1

#### PDGA and Disc Golf Demographics

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
<th>Competitors</th>
<th>Prizes</th>
<th>Disc Golf Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>732</td>
<td>58,100</td>
<td>$1,396,400</td>
<td>DiscGolf.com Website Analytics</td>
</tr>
<tr>
<td>2017</td>
<td>852</td>
<td>60,658</td>
<td>$1,271,500</td>
<td>Website: 2016 2013 2014</td>
</tr>
<tr>
<td>2018</td>
<td>994</td>
<td>71,676</td>
<td>$2,000,555</td>
<td>Visitors: 1,880,604 1,830,504 1,499,657</td>
</tr>
<tr>
<td>2019</td>
<td>1,113</td>
<td>79,362</td>
<td>$1,086,230</td>
<td>Unique Visitors: 1,880,604 1,830,504 1,499,657</td>
</tr>
<tr>
<td>2020</td>
<td>1,338</td>
<td>92,053</td>
<td>$2,168,673</td>
<td>Page views: 34,743,786 32,440,946 28,629,762</td>
</tr>
<tr>
<td>2021</td>
<td>1,688</td>
<td>107,006</td>
<td>$2,259,297</td>
<td>Pageviews: 4,280,426 4,291,735 4,291,735</td>
</tr>
<tr>
<td>2022</td>
<td>1,891</td>
<td>121,718</td>
<td>$2,535,530</td>
<td>Visitors: 00:05:01 00:04:34 00:06:11</td>
</tr>
<tr>
<td>2023</td>
<td>2,124</td>
<td>142,815</td>
<td>$2,912,539</td>
<td>% New Visitors: 22.31% 23.17% 23.91%</td>
</tr>
<tr>
<td>2024</td>
<td>2,581</td>
<td>175,183</td>
<td>$3,666,303</td>
<td>* These members increase daily</td>
</tr>
<tr>
<td>2025</td>
<td>3,404</td>
<td>205,365</td>
<td>$3,893,190</td>
<td></td>
</tr>
</tbody>
</table>

#### Leading States (ranked by members, as of 4/06)

<table>
<thead>
<tr>
<th>State</th>
<th>Members</th>
<th>Courses</th>
<th>Events</th>
<th>Age</th>
<th>Household Income (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>2,003</td>
<td>175 (3rd)</td>
<td>195 (1st)</td>
<td>0.9</td>
<td>&lt; $20,000 10%</td>
</tr>
<tr>
<td>California</td>
<td>2,548</td>
<td>219 (1st)</td>
<td>155 (3rd)</td>
<td>10-19</td>
<td>5.6% $20,000-$30,000 10%</td>
</tr>
<tr>
<td>Michigan</td>
<td>1,808</td>
<td>256 (1st)</td>
<td>162 (2nd)</td>
<td>20-29</td>
<td>28.4% $30,000-$40,000 12%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1,526</td>
<td>227 (2nd)</td>
<td>106 (5th)</td>
<td>30-39</td>
<td>33.8% $40,000-$50,000 11%</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,149</td>
<td>231 (1st)</td>
<td>72 (10th)</td>
<td>40-49</td>
<td>17.5% $50,000-$75,000 19%</td>
</tr>
<tr>
<td>Florida</td>
<td>1,089</td>
<td>139 (1st)</td>
<td>63 (18th)</td>
<td>50-59</td>
<td>10.3% $75,000-$100,000 18%</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,006</td>
<td>211 (1st)</td>
<td>72 (10th)</td>
<td>60-69</td>
<td>2.9% $100,000-$250,000 17%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>965</td>
<td>206 (2nd)</td>
<td>74 (9th)</td>
<td>70+</td>
<td>0.4% &gt; $250,000 1%</td>
</tr>
<tr>
<td>Colorado</td>
<td>906</td>
<td>161 (1st)</td>
<td>55 (13th)</td>
<td>Premium Members</td>
<td>Education</td>
</tr>
<tr>
<td>Maine</td>
<td>909</td>
<td>127 (1st)</td>
<td>66 (13th)</td>
<td>Eagle Club</td>
<td>83</td>
</tr>
<tr>
<td>New York</td>
<td>1,806</td>
<td>219 (1st)</td>
<td>162 (2nd)</td>
<td>Ace Club</td>
<td>140</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,149</td>
<td>231 (1st)</td>
<td>72 (10th)</td>
<td>Wilke Club</td>
<td>490</td>
</tr>
<tr>
<td>California</td>
<td>2,548</td>
<td>219 (1st)</td>
<td>155 (3rd)</td>
<td>Multi-year Men’s</td>
<td>578</td>
</tr>
</tbody>
</table>

**Notes:**
- An estimated 0.12 million players have played disc golf; two million are estimated to be regular players.