

**STAYING IN THE SWEET SPOT: HOW ELITE LEVEL GOLFERS ENGAGE IN,  
STRUCTURE, AND EXPERIENCE PRACTICE THROUGHOUT EXTENDED  
CAREERS**

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**STAYING IN THE SWEET SPOT: HOW ELITE GOLFERS ENGAGE IN,  
STRUCTURE, AND EXPERIENCE PRACTICE THROUGHOUT EXTENDED  
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## **DEDICATION**

I dedicate this dissertation to my wonderful and loving family. Your constant support through this process has been invaluable. I feel incredibly lucky to know each of you. You are all remarkable and inspiring people. I would not have made it to where I am today without your support and guidance. Thank you for believing in me and encouraging me to keep pursuing my dreams.

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## ABSTRACT

The path to expertise has been quantified on several occasions (Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson 2001; Ericsson & Charness, 1994; Ericsson 2008) as well as explored through qualitative retrospective methods (Bloom 1985; Kreiner, Phillips, & Orlick 1993; Hayman et. al. 2014). However, little research has investigated the experience of elite performers as they attempt to maximize their performance over time. The purpose of this study was to examine how elite golfers think about, structure, and experience practice intended to maximize performance throughout a long career.

The researcher utilized a phenomenological approach to explore the lived experience of five PGA Tour players as they reflected on their practice experience thus far. The central themes found were: a) *tailoring practice*, b) *achieving balance*, c) *staying engaged*, d) *being proactive*. The core thematic findings spring from two results: 1. The most effective practice for elite golfers are highly individualized, and 2. effective practice for these players is reached when they proactively tailor their approach to pursue appropriate balance and achieve consistent engagement. These findings may benefit golfers, golf coaches, and applied sport psychology practitioners. Theoretical implications and possibilities for future research are discussed.

## CHAPTER 1: INTRODUCTION

"Golf is a science, the study of a lifetime, in which you can exhaust yourself but never your subject."

**-David Forgan**

At The 2015 Cadillac Open Golf Championship, the world's number one ranked golfer, Rory McIlroy, pulled his fairway shot on the eighth hole to the left, sending his ball into a large water hazard. Immediately afterward, he did something uncharacteristic: He swung his offending 3-iron in a wide horizontal arc and sent it sailing after the ball into the middle of the lake (Harig, 2015). Compared to other great golfers, McIlroy is known for his cool temperament and positive demeanor on the golf course. While he has had much success in his career thus far, including four major championships, even he, like many other professional and amateur golfers is not immune to losing his cool after a bad shot. While the move may have been out of character for McIlroy, it was perfectly understood by any golfer or golf professional watching. "I just let frustration get the better of me," McIlroy commented. "It was in the heat of the moment, and if it had been any other club, I probably wouldn't have, but I didn't need a 3-iron for the rest of the round, so I thought why not" (Harig, 2015). This is just one example of how pursuing the game of golf can lead even reasonable people to do absurd things. Golf, like many other pursuits in life, often disappoints more than it rewards those who participate. It is this frustration and the desire to avoid it that compels players to work so hard on their game. However, how to do that work or practice effectively is not always known, and is a question of intense interest to players and professionals alike. While this need to understand effective practice strategies makes golf

similar to other sports or performance pursuits, golf is unusual if not unique given its longevity. Golf is played and practiced over decades, and throughout any elite career or lifetime of recreational play, an individualized approach to the game is required. In other words, golf requires highly personalized practice over more years than almost every other sport.

Approximately 60 million people play golf each year across the world (“Golf Today’s Golf A-Z, 2010”). Despite its popularity, very few golfers reach an elite or professional level. After going through a rigorous qualifying school to receive a PGA tour card, these elite golfers must finish in the top 125 on the money list to qualify for fully exempt status for the next season. The distinction between professional level golf and lesser skill is significant in several important respects: Elite players have, by definition, already attained an exceptional level of play. They are the best in the world and compete against others who have also earned that distinction. This level of performance rewards them with the financial means to make a full-time investment in maintaining and improving what is already an exceptional level of skill, and often over the course of many years--far longer than other athletes. The average NFL career, for example, lasts just 6.86 years (Hanzus, 2011); the average MLB career lasts 5.6 years (Roberts, 2007); the average NHL career lasts just over 5 seasons (Quanthockey.com), and NBA players can expect to play professionally, on average, just 4.5 years (Lopez, 2010). By contrast, the length of a golf career can last for decades, with the average age of a PGA tour professional being around 35 years old (Oscarson, 2013). Additionally, the athletically competitive and financially lucrative PGA Senior Tour accepts only players aged 50 and over, offering a second lifespan to what is already a long career.

In addition to longevity, one’s style and approach to the game of golf is what makes golf unique from some other, more standardized, sports. There is no absolutely correct way to play

golf, both in the technical elements of the game (e.g. swing mechanics, ball position, posture, etc.) as well as the strategic elements (e.g. course management). In fact, individual approaches to the game of golf often differ even at the highest level. For example, recent Masters champions Jordan Spieth and Bubba Watson have approached the game in completely different ways. In 2015, Spieth averaged 291.3 yards in driving distance (78th) while Watson averaged 315.2 yards off the tee (2<sup>nd</sup>). Spieth, however, was a much better putter than Watson and led the PGA tour in make percentage (25.93%) from 20-25 feet (“PGA Tour Stats,” 2015). These differences in approach while nevertheless attaining similar levels of performance underscores the importance of a golfer's mindset as he or she practices and shapes his or her individual game to be its best.

### **Purpose of the Study**

The purpose of this study is to examine how elite golfers experience practice--how they think about, structure, and react to practice intended to maximize performance throughout a long career. While elite skill acquisition has been quantified (Ericsson, Krampe, and Tesch-Römer, 1993; Sosniak, 1985; Gustin, 1985; Monsaas, 1985; Kalinowski, 1985; Wallingford, 1975), very little research has investigated the experience of elite performers, namely, elite golfers as they undergo this extensive training. From a practitioner standpoint, this research into the lived experience of exceptional golfers may be helpful in providing insight into the mindset of these elite performers as they face obstacles in a way that quantitative approaches may not address. Further, the specific experience of elite level golfers as they undergo rigorous training will be useful for golf professionals, sport psychology practitioners, and anyone who spends time practicing golf and seeks to improve their game. To appropriately interpret these experiences, it is first necessary to understand the literature surrounding the development of expertise as well as

the relevant learning theories that may influence elite skill acquisition. Furthermore, it is also relevant to take a look at obstacles that have the potential to interrupt training.

### **Effective Practice**

Drastic improvements in individual performance across domains have occurred throughout time. In the 1896 Olympic games, the winner of the marathon ran a time that would barely qualify for the current Boston Marathon (Ericsson, 1990). Similarly, significant improvements have been recorded in relation to music (Roth, 1982) and typing (Book, 1925a). Many of these improvements may be related to external influences such as technological advances in equipment and training facilities. Additionally, it is conceivable that experience has been passed down throughout the generations, thus giving the modern performers an advantage over those who performed centuries before them. Still, in order to become an expert in a given field, a significant amount of time investment or practice is required on the part of the individual.

**Deliberate Practice.** While the current study seeks to explore qualitative elements of practice, the quantitative demands of practice can influence psychological components of training that then impact a golfer's day-to-day experience. Thus it is important to understand the quantitative nature of practice as it contributes to elite skill. Early research on the acquisition of expert status in a given domain attempted to quantify the amount of practice required to do so. Simon and Chase's (1973) study on chess masters found that ten years of "intense preparation" was required to become an international chess master (p. 402). The "10 year rule" has been supported in other domains such as music (Sosniak, 1985), mathematics (Gustin, 1985), tennis (Monsaas, 1985), swimming (Kalinowski, 1985), and long-distance running (Wallingford, 1975).

Stepping beyond time as the primary factor influencing skill, subsequent research led to the study of Deliberate Practice, a term first coined by Ericsson, Krampe, and Tesch-Römer (1993). Deliberate Practice is broadly defined as “focused training” that “requires effort,” is “not inherently enjoyable” or “motivating,” and involves engaging with full concentration and practicing the tasks that are most difficult for the individual (Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson and Charness, 1994). The goal of deliberate practice is solely to improve performance (Hayman 2014). Furthermore, Ericsson, Krampe, and Tesch-Römer (1993) found that “monotonic benefits” accrue over time. Their “monotonic benefits assumption” attributes measurable improvements in performance to deliberate practice. Specifically, “the amount of time an individual is engaged in deliberate practice activities is monotonically related to that individual’s acquired performance.” Thus it follows “that individuals should attempt to maximize the amount of time they spend on deliberate practice to reach expert performance” (p.368).

In their initial study, Ericsson and colleagues gathered data on violin players at three different levels of performance (i.e. best, good, average). The amount of time spent in deliberate practice by the age of 18 was significantly higher for the best group (7,410 hours) compared to the good group (5,301 hours). The top two groups averaged significantly more time spent in deliberate practice compared to the average group (3,420 hours), thus supporting a monotonic relationship between skill level and amount of time spent in deliberate practice (Ericsson, Krampe, and Tesch-Römer, 1993, p. 379). Further, the best students reached the 10,000- hour mark around the age of twenty, which is consistent with the path of other professional violinists (p.379). While Ericsson and colleagues found relationships between broad skill level attainment among violin groups, little research has looked the differences in practice habits of those who are

already elite. The current study will explore the unique practice habits of elite level golfers as they attempt to maintain and fine-tune their skill.

### **Contextual Interference**

While the focus of Ericsson, Krampe, and Tesch-Römer (1993) was to quantify the relationship between deliberate practice and elite level skill, other relevant research has investigated the structure of practice and how it relates to elite skill development. Specifically, studies of Contextual Interference--a type of enhanced learning that arises from randomized practice--are of particular relevance to the present study.

Contextual Interference (CI) is defined as the “interference in performance and learning that arises from practicing one task in the context of other tasks” (Schmidt & Lee, 2005). A CI effect is found when subjects are administered tasks of varying difficulty in random order, as opposed to performing those same tasks administered in blocks of similar difficulty. While blocked group practice subjects perform better in practice performance, the randomized group performs better on retention tests.

In golf, evidence for the CI effect has been replicated. Porter, Landin, Herbert, and Baum (2007) tested the effect of high, moderate, and low CI on novice golfers. Here, subjects were assessed on both outcome performance (i.e. proximity to the hole) as well as technical performance (i.e. swing technique). Results indicated that learning measured by both criteria was enhanced by incorporating greater contextual interference during skill acquisition. They conclude it may be beneficial to incorporate randomized practice during the process of learning golf skills (Porter et. al., 2007). While this finding supports the benefits of CI practice to novice golfers who are learning skills, currently there is no research on CI and its effects on elite level

golfers who are working to master skills. This study seeks, in part, to investigate what elite golfers experience when engaging in randomized practice.

### **Practice Constraints**

In addition to illuminating what constitutes effective practice, research provides insight into what obstacles may exist for athletes as they train. Ericsson, Krampe, and Tesch-Römer (1993) hypothesized three potential constraints to accessing deliberate practice for the extended period of time necessary to reach an elite level in a given domain. Elite performers must successfully navigate the “resource,” “effort,” and “motivational” constraints (p. 368-369).

**Resource Constraint.** According to Ericsson, Krampe, and Tesch-Römer (1993), performers who suffer from a lack of resources may struggle to implement the practice techniques necessary to acquire elite abilities (p. 370). In outlining this constraint, they cite research done by Bloom et. al. (1985), who retrospectively gathered qualitative data on elite level performers in several domains (i.e. concert pianists, accomplished sculptors, Olympic swimmers, world-class tennis players, research mathematicians, and research neurologists). Without exception, the elite performers had access to deliberate practice because their families were willing to make sacrifices. Parents would drive long distances and invest significant time and energy in their child. Additionally, parents would often allow the gifted children to have special privileges compared to the other children in the family (Bloom et. al., 1985, p. 54).

**Effort Constraint.** Ericsson also identifies “effort” as a possible constraint on implementing deliberate practice. Depending upon the domain, cognitive and/or physiological loads are placed on performers as they engage in deliberate practice. Even when elite performers

“make a full-time commitment to the domain” and spend, “between 50 and 60 hours per week on domain related activities,” they reduce the amount of time they engage in deliberate practice to four or fewer hours per day (Ericsson et. al .1993, p. 391). However, there is evidence that the time individuals spend in deliberate practice can slowly be increased with age (p.390).

Eisenberger (1992) found evidence that speaks to the elongation of effortful activities based on his theory of “Learned Industriousness,” which indicates that when a high physical or cognitive effort is required, the adverseness of that effort can be diminished by pairing it with a “secondary reward” (p.251).

Given the effortful nature of deliberate practice as described by Ericsson et. al (1993), the balance between deliberate practice and other domain related activities as well as rest and recovery could be a determining factor for burnout (or the prevention of burnout) in any domain. While it may appear plausible to prolong deliberate practice in an attempt to expedite the acquisition of expertise, the cognitive and/or physiological strain that accompanies daily deliberate practice requires an adequate amount of rest and recovery. In fact, Ericsson, Krampe, and Tesch-Römer (1993) found that the top two groups of violin players slept reliably longer (60.0 hours per week) than the average group (54.6 hours per week) (p.376).

**Motivational Constraint.** Finally, Ericsson and colleagues identify “motivation” as a possible constraining influence on the implementation of deliberate practice. Due to the highly effortful experience of deliberate practice as indicated by Ericsson, Krampe, and Tesch-Römer (1993), young performers rely on encouragers (e.g. parents, coaches) to reward effort and initiate motivation. In fact, it is often the case that future elite performers will have an introductory period of fun and enjoyable experience in a domain before beginning regimented deliberate

practice (Bloom 1985b; Côté, 1999). The Developmental Model of Sports Participation (DMSP) originally conceptualized by Côté, (1999); Côté, & Hay, (2002), advocates for a multitude of playful experiences in adolescence. Later research on the DSMP suggests that, “regular long-term involvement within fun, playful, unsupervised athlete centered learning environments throughout childhood and the early teenage years as this pathway may increase the likelihood of acquiring expert status in the long term” (Hayman, Borkoles, Taylor, Hemmings, Polman, 2014, p. 960).

### **Limitations and Gaps in Previous Research**

The literature on motivation and its relationship to the acquisition of expert performance primarily focuses on retrospective data relating to early stages of development (Bloom, 1985b). Given the nature of these studies, retrospective data collection is, though a limitation, an unavoidable necessity. It is impossible to collect developmental data on elite performers until they have reached elite status and thus are imperfectly reflecting back on their development. Little research has looked at the maintenance and/or improvement of elite performance and the motivational obstacles associated with the day-to-day experience of deliberate practice.

Additionally, as will be discussed in greater detail in the literature review, specific practice structure beyond the generic basic categories such as short game, or driving range practice have yet to be researched in elite level golf. However, research in motor learning has provided convincing data on the benefits of contextual interference (CI) when learning a motor skill (Porter, Landin, Herbert, and Baum, 2007; Hall, Domingues, and Cavazos 1994; Goode & Magill, 1986; Holladay & Quinones, 2003; Rohrer & Taylor, 2007).

## **Significance of the Present Study**

While the path to expertise has been quantified on several occasions (Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson 2001; Ericsson & Charness, 1994; Ericsson 2008) as well as explored through qualitative retrospective methods (Bloom 1985; Kreiner, Phillips, & Orlick 1993; Hayman et. al. 2014), little research has investigated the experience of elite performers as they attempt to maximize their performance over time. Specifically, the day-to-day experience of both engaging in practice as well as navigating the obstacles that get in the way of it have not been explored. While this study is informed by current data relating to the development of expertise, it seeks an understanding of what transpires for elite golfers after that. Through exploring the lived experience of elite golf professionals engaging in deliberate practice and their journey through navigating obstacles, insight may be added to the quantitative and retrospective developmental literature and ultimately help players, coaches, and sport psychology professionals in the future.

## CHAPTER 2: LITERATURE REVIEW

### **Practice Theory**

While the current study seeks to explore qualitative elements of practice, it is important to understand quantitative research on the nature of expertise because it describes the standard by which performers may achieve elite status. Further, for the purposes of this study, quantitative demands of practice may influence psychological components that impact a golfer's day-to-day experience. Simon and Chase (1973) found that it takes roughly ten years of “intense preparation” to become an international chess master (p. 402). This was groundbreaking research at the time because there was a commonly held belief, dating back to Sir Francis Galton (1869/1979), that genetic factors predispose excellence in a given field. The “ten year rule” has since been supported in other domains including long distance running (Wallingford, 1975), music (Sosniak, 1985; Ericsson, Krampe, and Tesch-Römer, 1993) mathematics (Gustin, 1985), tennis (Monsaas, 1985), and swimming (Kalinowski, 1985).

### **Deliberate Practice**

These initial studies on practice parameters led to the development of the concept of Deliberate Practice, a term first coined by Ericsson, Krampe, and Tesch-Römer (1993). Deliberate Practice is broadly defined as “focused training” that “requires effort,” is “not inherently enjoyable” or “motivating,” and involves engaging with full concentration and practicing the tasks that are most difficult for the individual (Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson and Charness, 1994). The goal of deliberate practice is solely to improve performance (Hayman, Borkoles, Taylor, Hemmings, & Polman, 2014). Ericsson, Krampe, and Tesch-Römer (1993) found evidence to support a “monotonic benefits assumption.” Namely,

“the amount of time an individual is engaged in deliberate practice activities is monotonically related to that individual’s acquired performance.” Thus it follows “that individuals should attempt to maximize the amount of time they spend on deliberate practice to reach expert performance” (p. 368).

In their initial study, Ericsson and colleagues used a diary-based form of data collection with violin players in addition to retrospective estimates (Ericsson, Krampe, and Tesch-Römer, 1993) three groups of violin players were selected from the Music Academy of West Berlin based on their level of expertise. The top group was considered by their teachers to have “the potential for careers as international soloists,” while the second group was considered “good violinists” and the third group was in the “music education” department and thus was performing lower than the “good violinists” (p.373). The violinists in each group were asked to categorize daily activities they engaged in and rank them for “relevance,” “effort,” and “pleasure” (p.374). These results were then corroborated with retrospective estimates to attempt to check for accuracy. In accordance with their theoretical framework, “practice alone” was rated as “the most important activity related to improvement of violin performance” and was considered more effortful than many other domain related activities that were less relevant to improving performance (p. 375).

Furthermore, there was a clear distinction between “practice alone” and other domain related activities. Specifically, the top two groups spent significantly more time on “practice alone” (24.3 hours per week) than the bottom group (9.3 hours per week) (p.375). The amount of time spent in deliberate practice by the age of 18 was significantly higher for the best group (7,410 hours) compared to the good group (5,301 hours). The top two groups averaged significantly more time spent in deliberate practice compared to the average group (3,420 hours)

thus supporting a monotonic relationship between skill level and amount of time spent in deliberate practice (Ericsson, Krampe, and Tesch-Römer, 1993, p. 379). Furthermore, the best students reached the 10,000 mark around the age of twenty, which is consistent with the path of other professional violinists (p.379). This finding has been replicated in several other domains including Chess (Charness, Krampe, & Mayr, 1996), medicine (Ericsson, 2008), and sport (Helsen, Starkes, & Hodges, 1998; Hodges & Starkes, 1996; Starkes, Deakin, Allard, Hodges, & Hayes, 1996).

**Criticism.** Criticism of Ericsson's Deliberate Practice Theory has been varied and robust. Early criticism asserted that the theory fails to account for the importance of genetic differences in determining the acquisition of expert performance. These critics point out that talent and genetics matter across domains: music (Davis, 1994) and intellectual ability (Baron-Cohen, 1998). Many critics have referenced exceptions to the Ericsson's "ten year rule" including Mozart whose early masterpieces are "widely known" (Howe et. al, 1998, p. 401). Additionally current chess world champion, Magnus Carlsen, achieved "grandmaster" status only five years after starting to play chess (Gobet & Ereku, 2014).

Still, those in support of the "monotonic benefits assumption" argue that the genetic and talent argument lacks validity. Elite performers like Magnus Carlsen and Mozart are retrospectively labeled as talented after they have already achieved greatness in a particular domain (Howe et. al, 1998; Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson and Charness, 1994). Further, it is difficult to tease apart talent from opportunity because many successful performers were subjectively recognized as having talent at an early age and then given every opportunity to succeed (Bloom, 1985b).

Beyond this genetic argument, critics of Ericsson's theory also reject the requirement that deliberate practice not be inherently enjoyable. They cite notable, if anecdotal, contradictions: Gobet, & Ereku, (2014) found that Magnus Carlsen only practices things he enjoys (p. 2). Further, legendary golfer Ben Hogan enjoyed practicing (Jenkins, 2010). He said, "When I'm hitting the ball where I want, hard and crisply—when anyone is—it's a joy that very few people experience (Jenkins, 2010, p. 14). While Hogan is recalling an enjoyable practice experience, it appears that having the experience of hitting shots well may not fulfill the requirement set by Ericsson (1993) that deliberate practice not be enjoyable, but rather for the sole purpose of improving one's performance. It may be that the act of hitting shots that a golfer is *least* familiar with and struggles to execute may be more true to Deliberate Practice Theory.

Additional critics point out that there is a very limited ability to assess how a given individual athlete may apply deliberate practice. According to Coughlan, Williams, McRobert, and Ford (2014), the "monotonic benefits assumption" (From Ericsson et. al. 1993) only addresses the relationship between deliberate practice and attainment level. It does not address differences in the quality or efficiency of the deliberate practice engaged in, which might be expected to account for a substantial proportion of the variation in eventual attainment" (p. 449-450).

Beyond all these arguments, however, current critics assert the real flaw in Deliberate Practice Theory is in that it inappropriately attributes success to such training. Hambrick, Oswald, Altmann, Meinz, Gobet, and Capitelli (2014) looked at deliberate practice theory in chess and found that deliberate practice only accounts for 34% of the variation in chess level thus concluding that deliberate practice is "necessary but not sufficient for why some people become experts in a given domain but others fail to do so" (p.41). Similarly, Macnamara, Hambrick, and

Oswald (2014) found that deliberate practice is less important than previously believed. Here, Macnamara, and colleagues found that deliberate practice accounted for only 21% of the variation in performance games, 18% for sports, 4% for education, and less than 1% for professions (p.1608).

Other critiques have pointed out that the performance benefits of deliberate practice may depend upon the particular domain. In tasks that are predictable, deliberate practice may be more effective while unpredictable tasks show a relatively weak correlation from deliberate practice and performance level (Ullen, Hanbrick, & Mosin, 2016).

**Deliberate practice in golf.** There is little research concerning the practice of elite level golfers, and what exists is primarily qualitative. Hayman, Borkoles, Taylor, Hemmings, and Polman (2014) used an Interpretive Phenomenological Analysis to gather data on “English Golf Union” players (M age=18.8, SD = 2.1) (p. 961). Data analysis indicated an increase in effortful practice with an emphasis on “short game” at approximately age sixteen (p. 966). Additionally, these golfers spent more time practicing and less time participating in competitive events (p.967). The age in which an emphasis is placed on deliberate practice has been found to change across domains (Bloom et. al., 1985).

Hayman et. al. (2014) also provide analysis of key moments in development that led to these golfer’s elite status. During the initial transition to deliberate practice and a deliberate focus on a specific golf skill, these golfers experienced a “non-linear developmental pathway” that often provided “wake up calls” to the golfers (p.968). Here, they would face obstacles relating to performance (e.g. slumps, swing changes) as well as obstacles off the golf course (e.g. parents

divorce, academic obligations). In these moments, the golfers recognized the need to “make sacrifices” in order to continue their development. One golfer commented:

*“It is really difficult in golf because I feel that I have lived a different life compared to my friends. It is just not the same because I always have a tournament around the corner and it is very intense, a sport that everyone knows if you go out the night before you cannot turn up the next morning and play quality golf. I find that I have never had a massive social side really especially in the summer as the focus was to just play and practice”* (p. 968-969).

Additionally, these golfers made the choice to stop playing other sports around the age of sixteen in order to spend more time working on their golf game (p.969). It is during this time that these golfers began networking and self-reflecting in an attempt to maximize their resources (p. 969-970).

Jenkins (2010) applied Ericsson’s theory of deliberate practice in his historical study of the world-renowned golfer, Ben Hogan. Hogan’s approach to practice appears to be in support of some fundamental tenants of Ericsson, Krampe, and Tesch-Römer’s (1993) deliberate practice theory. Specifically, the effortful nature of Hogan’s preparation was clear from Jenkins (2010) who stated that Hogan would exert, “all of [his] time and energies” (p. 12). Hogan would often practice by hitting 150 balls in a row and taking about 30 seconds per shot (p. 13). This extended pre-shot routine allows for golfers to mentally prepare for each golf shot and thereby gain more experience than the average golfer who may hit 150 balls but do so in haste. The mental components of practice that accompanied Hogan’s hours of hard work were significant. Jenkins (2010) concludes that, “Hogan’s more integrated understanding of the fundamentals of the golf swing was associated with the development of more sophisticated cognitive (mental) representations and physiological adaptations” (p. 19). These mental components were neglected by early research (Ericsson et. al, 1993) relating to deliberate practice theory that

focuses primarily on the quantitative elements of practice (e.g. duration). The present study seeks to explore possible mental aspects of practice as experienced by elite golfers.

### **Contextual Interference**

Originally developed to describe verbal learning (Battig, 1966) and later motor learning (Shea and Morgan, 1979), the “contextual interference effect” (CI effect) is defined as the “interference in performance and learning that arises from practicing one task in the context of other tasks” (Schmidt & Lee, 2005). Specifically, a CI effect is found when subjects are administered tasks of varying difficulty in random order, as opposed to performing those same tasks administered in blocks of similar difficulty. While blocked group practice subjects perform better in practice performance, the randomized group performs better on retention tests.

Two hypotheses have been used to explain the CI effect: the “elaboration and distinctiveness hypothesis” (Shea & Morgan, 1979; Shea & Zimny 1983) as well as the “forgetting and reconstruction hypothesis” (Lee & Magill 1983, 1985). The elaboration and distinctiveness hypothesis suggests, “the retention difference is due to the differences in elaborative and distinctive processing that are promoted in random practice, and/ or degraded by blocked practice, and the result that these processes contribute to the durability of memories,” while the forgetting and reconstruction hypothesis suggests, “the retention effect is due to the differences in the amount of planning that is promoted in random practice and/ or diminished by blocked practice: greater planning processes enhance learning” (Hodges & Williams, 2012, p. 90).

Evidence supports the CI effect in motor skill acquisition in sport. Hall, Domingues, and Cavazos (1994) found that random practice groups perform better on retention tests than blocked

practice groups. In a design involving collegiate baseball batters, players were divided into a blocked, random, and control groups. The blocked group was given a set of three different pitches (fastball, curveball, and change-up). The batters received these pitches in a blocked order where the same pitch was thrown repeatedly. The random group was given the same amount of extra practice, but each pitch was random and unexpected. The control group received no extra practice. In later retention trials, the random group performed better than the other two groups (Hall et. al., 1994). This finding has remained consistent in other domains (Goode & Magill, 1986; Holladay & Quinones, 2003; Rohrer & Taylor, 2007).

Furthermore, evidence suggests that, when given the option, expert performers may better understand the benefit of randomized practice compared to less skilled performers. Specifically, Coughlan, Williams, McRobert, and Ford, (2014) found evidence that expert Gaelic footballers self-selected randomized practice more often than the intermediate group when attempting to improve their pre-test scores. Participants in this study were asked to perform two types of kicks towards a Gaelic football goal post and were awarded points based on accuracy. Here, the experimenter ran participants through a pre-test, acquisition phase, posttest, and a delayed retention test (p.452). During the acquisition phase, the participants were given some autonomy with regard to the nature of their practice including “frequency of kicks, which kick they attempted to improve, and the order in which they practiced the two types of kicks” (p.452). The expert group chose random practice during practice blocks 26% of the time, while the intermediate group only engaged in random practice 3% of the time (p.457).

**Contextual interference in golf.** In golf, evidence for the CI effect has been replicated. Porter, Landin, Herbert, and Baum (2007) tested the effect of high, moderate, and low CI on

novice golfers. Here, subjects were assessed on both outcome performance (i.e. proximity to the hole) as well as technical performance (i.e. swing technique). After a pretest and a brief instruction period, three distinct levels (low, moderate, and high) of CI were provided during both chipping and putting skill acquisition. Each group hit a total of eighty putts and eighty chips. The low CI group hit 80 putts in a row followed by 80 chips. The moderate CI group switched every ten shots (e.g. ten shots on putting followed by ten shots on chipping). The high CI group rotated on every shot. Results indicated that incorporating greater contextual interference during skill acquisition enhanced learning in both outcome performance as well as technical performance. Porter et. al. conclude it may be beneficial to incorporate randomized practice during the process of learning golf skills (2007). While this finding supports the benefits of CI practice to novice golfers who are learning skills, currently there is no research on CI and its effects on elite level golfers who are working to master skills as this study seeks to explore.

## **Mental Skills**

Beyond the emerging understanding of Contextual Interference and its effect on learning during practice, incorporating mental training has been found to be beneficial in skill acquisition and performance. Additionally, if not anecdotally, mental skills are significant for competitive golfers (Finn, 2009). For the purposes of this study several mental training techniques and strategies warrant review.

**Visualization.** Feltz and Lander (1983) conducted a meta analysis of 60 studies relating to mental practice and motor skill acquisition. Here, an average effect size of .48 indicated that mental practice “somewhat” benefits performance more than no practice at all (p. 41).

Additionally, as relevant to the current study, mental practice effects were found in both “initial and later stages of learning” (p. 47).

One explanation for this effect has been referred to as “the symbolic learning explanation” (Corbin, 1972; Schmidt, 1982; Feltz and Lander, 1983). Here, “mental practice facilitates motor performance only to the extent that cognitive factors are inherent in the activity” (Feltz and Lander, 1983, p. 45). Motor tasks are on a continuum from highly cognitive (e.g. maze learning tasks) to requiring less cognition (e.g. foul shooting, dart throwing). Although those tasks that are located on the highly cognitive side of the continuum tend to have the largest effect sizes for mental practice, interestingly those tasks lower on the continuum have shown large effect sizes (i.e., >.80). This finding has remained inconsistent and may be due to the differences in the quality of the mental preparation and imagery engaged in by the participants (p. 46).

Another explanation may be the psychological advantage that accompanies mental practice. When participants are able to engage in imagery before the task, they are able to hone in on “relevant aspects of the task” and thus “develop a capacity for narrowed or focused attention” (p. 50). If done correctly these participants may be improving their attention and preventing “task-irrelevant thoughts and images” thereby improving performance from pre-acquisition trials (p. 50).

**Self-talk.** In addition to visualization and its benefits in learning or mastering a motor task, recently self talk has been widely discussed as being beneficial for “skill acquisition, learning, and task performance enhancement in sport” (Hatzigeorgias, Zourbanos, Galanis, & Theodorakis, (p. 351). Depending upon the situation it may be advantageous to incorporate either motivational or instructional self-talk cues. Motivational self-talk can be effective in

“psyching up,” “building confidence,” and “creating positive moods” (Hatzigeorgias et. al, 2011, p. 351). Instructional self-talk cues facilitate the performer in technical, strategic, and “kinesthetic” characteristics skill development (p.349). The present study will explore the role of mental training during practice.

### **Practice Constraints**

While evidence has linked both the quantity of practice (Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson 2001; Ericsson & Charness, 1994; Ericsson 2008) as well as the nature of practice to skill acquisition (Shea and Morgan, 1979; Hodges & Williams 2012; Hall et. al., 1994), little research examines what gets in the way of practice. In order to understand how these practice theories can be applied, it is necessary to examine constraints that may exist for the athlete as well as what motivations are optimal for the consistent application of specific practice techniques.

Although Ericsson has not recanted the “monotonic benefits assumption” or the “10 year rule,” he does indicate potential constraints that elite performers may encounter during acquisition of expert performance. Ericsson, Krampe, and Tesch-Römer (1993) hypothesized three potential constraints to accessing deliberate practice for the extended period of time necessary to develop elite performance. Elite athletes must successfully navigate the “resource,” “effort,” and “motivational” constraints (p. 368-369).

**Resource constraint.** According to Ericsson, Krampe, and Tesch-Römer (1993) performers who suffer from a lack of resources may struggle to implement the practice techniques necessary to acquire elite abilities (p. 370). In outlining this constraint, he cites

research done by Bloom et. al. (1985a), who retrospectively gathered qualitative data on elite level performers in several domains (i.e. concert pianists, accomplished sculptors, Olympic swimmers, world-class tennis players, research mathematicians, and research neurologists). Without exception, the elite performers had access to deliberate practice because their families were willing to make sacrifices. Parents would drive long distances and invest significant time and energy in their child. Additionally, parents would often allow the gifted children to have special privileges compared to the other children in the family (Bloom et. al., 1985, p. 54).

Additionally, the accessibility of quality instruction is a necessity in the development of elite level skill. Although the specific nature of the instruction varies across domains, the need for appropriate teachers is necessary throughout development. For example Bloom et. al., (1985) discuss in great detail the significance of gaining access to “master” piano teachers during the “later years” of the concert pianist’s development (p. 59). These teachers would offer profound insight and individualized attention that other teachers were not capable of offering. Core components of piano performance (e.g. technical mastery, technique) became expected in every lesson so an emphasis could be placed on performing the music (p. 63). They would assign pieces that would require “a minimum of four hours a day” and expect their pupils to be “capable and self motivated” (p. 63).

**Effort constraint.** Ericsson also identifies “effort” as a possible constraint on implementing deliberate practice. Depending upon the domain, high cognitive and/or physiological loads are placed on performers as they engage in deliberate practice. Even when elite performers “make a full-time commitment to the domain” and spend “between 50 and 60 hours per week on domain related activities,” they reduce the amount of time they engage in

deliberate practice to four or less hours per day (Ericsson et. al .1993, p. 391). However, there is evidence that the time individuals spend in deliberate practice can slowly be increased with age (p.390). Eisenberger (1992) found evidence that speaks to the elongation of effortful activities based on his theory of “Learned Industriousness,” which indicates that when a high physical or cognitive effort is required, the adverseness of that effort can be diminished by pairing it with a “secondary reward” (p.251).

Given the effortful nature of deliberate practice as described by Ericsson et. al., (1993) the balance between deliberate practice and other domain related activities as well as rest and recovery could be a determining factor for burnout (or the prevention of burnout) in any domain. While it may appear plausible to prolong deliberate practice in an attempt to expedite the acquisition of expertise, the cognitive and/or physiological strain that accompanies daily deliberate practice requires an adequate amount of rest and recovery. In fact, Ericsson et. al., (1993) found that the top two groups of violin players also slept reliably longer (60.0 hours per week) than the average group (54.6 hours per week) (p.376).

**Motivational constraint.** Finally, Ericsson identifies “motivation” as a possible constraining influence on the implementation of deliberate practice. Due to the highly effortful experience of deliberate practice as indicated by Ericsson et. al. (1993), young performers rely on encouragers (e.g. parents, coaches) to reward effort and initiate motivation (Bloom, 1985b). In fact, it is often the case that future elite performers will have an introductory period of fun and enjoyable experience in a domain before beginning regimented deliberate practice. Originally conceptualized by Cote (1999), the Developmental Model of Sports Participation (DMSP) suggests that, “regular long-term involvement within fun, playful, unsupervised athlete centered learning environments throughout childhood and the early teenage years as this pathway may

increase the likelihood of acquiring expert status in the long term” (Hayman, Borkoles, Taylor, Hemmings, Polman, 2014, p. 960). This was the case in Hayman et. al. (2014), when, in spite of a more rigorous practice regiment, these participants with “sufficient maturity” also had the ability to enjoy the difficult aspects of practice (p.971).

However, motivation to practice may vary across domains. Bloom (1985b) emphasizes that the end goal of becoming an expert can often be a significant motivator to practice and states “motivation to practice becomes so closely connected to the goal of becoming an expert performer and so integrated with the individual’s daily life that motivation to practice, per se, cannot be easily assessed” (p. 372).

The literature on motivation as it relates to the acquisition of expert performance primarily focuses on retrospective data relating to the early stages of development (Bloom, 1985b). Little research has looked at the maintenance and improvement of elite performance and the motivational obstacles associated with the day-to-day experience of deliberate practice. Still, Lemre, Robergs, & Stray-Gundersen (2007), found evidence that suggests that self-determined motivation has a “direct effect on athlete burnout” (p. 124).

## **Motivation Theory**

**Burnout, overtraining, overreaching.** Athletic burnout usually occurs when athletes experience, “chronic fatigue, poor sleep patterns, episodes of depression and helplessness” as well as “impaired” performance (Lemre, Robergs, & Stray-Gundersen 2007, p.116). Furthermore, it is distinguished from less severe athletic experiences such as “staleness” and “overtraining” based on the symptoms. Silva (1990) found that the most reported symptom

of athletic burnout with collegiate athletes was a “lack of interest/no desire to continue playing” (p. 14). The reported symptoms of “staleness” and “overtraining” were clearly aversive and involved physical and mental fatigue; however, they are seen as a normal part of training and, unlike “burnout” do not induce the desire for withdrawal (Silva, 1990, p. 13-14). Although Silva (1990) provides evidence supporting the distinctions between “staleness,” “overtraining,” and “burnout,” it is clear that the less severe symptoms (i.e. staleness, overtraining) can lead to “burnout” if they are not addressed. For example, Lemyre et. al. (2007) found that “overtraining” was positively correlated to “athletic burnout” (p. 115). Given the potential length of a career as an elite professional golfer, staying engaged may be an important part of maintaining and improving excellence in golf performance. The current study seeks to explore the lived experience of golfers' motivations, what factors elite golfers believe contribute to varying levels of motivation over time, and their responses to those variation.

**Self determination theory.** In a now classic, Deci and Ryan’s (1985) meta analysis identified motivational factors influencing human behavior. Specifically, Deci and Ryan (1985) discussed the capacity and the need for self-determination and identified what relevant characteristics facilitate or hinder self-determination. Specifically in regard to the acquisition of learned behaviors, “contexts supportive of autonomy, competence, and relatedness were found to foster greater internalization and integration than contexts that thwart satisfaction of these needs” (Ryan, and Deci, 2000, p. 76). Following their work, Self-determination Theory has been repeatedly and significantly linked to motivation in sport (Vallerand & Losier, 1999; Mageau & Vallerand, 2003; Blanchard, Wallerand, Sablonniere, & Provencher, 2007). Self-determination

is, "...the capacity [and need] to choose and to have those choices, rather than reinforcement contingencies, drives or any other forces or pressures, be the determinant of one's action" (Deci & Ryan, 1985, p. 38). However, there are some internal rewards of engaging in a self-determined activity that can enhance intrinsic motivation to further engage in the activity, but that are not technically external reinforcements. As indicated by Skinner (1953), these rewards are not "operationally separate from the activity itself," and therefore are not labeled as reinforcements (Deci & Ryan, 1985, p. 34). Specifically, these internal rewards can relate to feelings of autonomy and competency (p. 34).

***Intrinsic motivation.*** It is difficult to describe self-determination without also referencing intrinsic motivation or the motivation to engage in an activity for the sole purpose of enjoying the activity rather than participating in the activity for an external consequence. In fact, evidence suggests that even the presence of an external reward can undermine intrinsic motivation (Deci 1971; Deci, Koestner, & Ryan 1972b; Pritchard, Campbell, and Campbell 1977) thus undermining self-determination (Deci & Ryan, 1985). However, as mentioned, not all rewards have a negative correlation to intrinsic motivation. In sport for example, the experience of winning an Olympic Gold medal may provide an external reward (e.g. gold medal, winning the race, etc.) but also may satisfy a need for competence, thereby fueling intrinsic motivation. While it may be possible to identify external and internal rewards, it is necessary to understand the effect that environmental and contextual influences have on the individual who is receiving (or not receiving) these rewards.

To test these contextual influences on perception, researchers created empirical propositions that would help guide research. Deci (1975) introduced “Cognitive Evaluation Theory” to gather data on the effects of “external events on intrinsic motivation” (Deci & Ryan, 1985, p. 62). Here, three propositions were identified:

***proposition I.*** An internal or external “locus of causality” will have enhancing or limiting effects on intrinsic motivation respectively.

***proposition II.*** Events that induce the perception of competence have the propensity to enhance intrinsic motivation.

***proposition III.*** The “informational,” “controlling,” and “amotivating” aspects of feedback and their relative existence and perceived salience have an impact on intrinsic motivation and thus self-determined functioning. Here, the “informational” aspect of feedback promotes an “internal perceived locus of causality and perceived competence, thus enhancing intrinsic motivation.” The “controlling” aspect of feedback undermines intrinsic motivation by “facilitating an external locus of causality.” The “amotivating” aspect “facilitates perceived incompetence, thus undermining intrinsic motivation” (p. 64).

## **Awards in Sport**

Rewards can serve as a significant source of feedback for many performers in the sport arena. However, as indicated, the impact these rewards have on self-determination and intrinsic motivation is complex. This is largely due to individual differences and the relative salience that the reward has to the performer. Rewards that are controllingly salient promote an external locus of causality often induce low perceived self-determination and hinder intrinsic motivation, while

rewards that are informationally salient may increase perceived competence and enhance intrinsic motivation (Deci & Ryan, 1985; Deci, Koestner, Ryan, 2001). On the PGA tour for example, if a golfer feels joy for improving his driving accuracy from 60% to 75% in the last tournament, that may lead to a perception that is informationally salient because it would provide feedback that directly relates to competence of a particular skill (i.e. driving accuracy). This ultimately may fuel intrinsic motivation and encourage the golfer to improve other parts of his game. On the other hand, if the same golfer receives a bonus check from his sponsors for finishing in the top ten in a tournament, that reward would be controllingly salient and may hinder intrinsic motivation to improve particular skills. However, it is important to note that the same reward may be interpreted either in a controlling way or informational way depending upon the individual. The current study will examine how elite golf professionals view rewards and what influence their perception on rewards has on their motivation to engage in practice.

### **Goal Setting.**

Locke's (1968) initial goal-setting theory states that goals increase performance and are more effective when they are specific and challenging as compared to the simplistic "do your best." Much research has expanded upon this theory in the industrial/organizational domain and more recently the sport and exercise domain. Three types of goals have been identified in the literature: outcome, performance, and process (Hardy & Jones, 1994; Kingston & Hardy, 1997). Outcome goals usually relate directly to competitive standing and "social comparison processes (e.g., to win a competition)" where as performance goals relate to "self-referenced performance standards (e.g., making a gross score of 76 in a round of golf). Process goals relate to the moment-to-moment occurrences during performance (e.g., keeping your elbow in on your back

swing) (Kingston & Hardy, 1997, p. 278-279). Performance goals have been advocated over outcome goals because they can be more controlled and can therefore be altered according to skill level. Performance goals allow a team that loses to still recognize improvement, thus fueling “motivation, low anxiety, and consistent success” (p. 279).

While clear distinctions between outcome goal setting and process goal setting have been researched, fewer studies have looked at the differences between process and performance goal setting. Kingston & Hardy (1997) looked specifically at goal setting in amateur golfers from the UK. Here, 37 male golfers were placed in to two experimental groups of equal skill level based on handicap and a control group. Both experimental groups were given goal setting training according to their designated group. One group was educated on performance goal setting while the other on process goal setting (p.281-284). The control group did not undergo goal setting training. Following the training, each experimental group spent approximately three months using the goals during their golf training. Groups were assessed based on skill level improvement during the training phase. Additionally each group was given assessments (i.e. CSAI-2 and SPSQ) that judged self-efficacy, cognitive anxiety, control, and concentration. The results indicated that the process group outperformed the performance group in both skill level and psychological ability to succeed (i.e. self efficacy, cognitive anxiety, control, and concentration).

In the present study, goal setting will be investigated by asking the participants to recount their goal setting practices and experience.

## **Optimal Challenges**

Flow in sport often accompanies elite performance and has been recently defined as “athletes’ full engagement in their athletic performance that involves an ideal balance among focus, enjoyment, the challenges of the competitive situation, and the athlete’s skills” (Carter, River, Sachs, 2013). When individuals engage in a challenge that is beyond their capacity, they experience anxiety; however, when individuals engage in a challenge that is below their capacity they experience boredom. Csikszentmihalyi (1975) originally conceptualized “flow” and emphasizes the challenge-skills balance that is necessary to attain a state of “flow.” Clearly, there are motivational implications relating to the characteristics and the ability to achieve a flow state. As indicated previously in Deci & Ryan’s (1985) discussion of cognitive evaluation theory and specifically, *proposition II*, “feedback that signifies or promotes competence within a context of self-determination will enhance intrinsic motivation, particularly when the activity is optimally challenging” (p. 318). It appears that there is a sweet spot where athletes can appropriately challenge themselves to gain the benefit of an engaging, flow-like experience while also choosing scenarios in which they can be competent thus enhancing their intrinsic motivation. The current study will seek to explore if and how elite golf professionals challenge themselves during practice and what impact practice difficulty has on perception of engagement.

## **Ongoing Excellence**

While no research has looked at the improvement of elite golf performance throughout a long career, a significant study was conducted involving Olympians and their experience of attempting to improve in a world-class arena. Kreiner, Phillips, and Orlick (1993) interviewed Olympic athletes who had recently won at least one world championship and gained insight into

the process of continuing to perform at a high level after world-class success (p.33). Several relevant characteristics were found to accompany ongoing excellence and two in particular were found to relate to optimal training and preparation after winning a world championship.

**Belief plus focus on task.** Athletes who remained successful at a world-class level believed that they had the ability to continue to perform well and structured practice accordingly. One athlete stated the following about the preparation relating to Olympics:

*I was not concerned about what was going on around me [as in previous competitions]. We were so focused on what we were doing. We had been training with the mind-set of being number one and believed we could do it. Our training was a lot more intense, focused, and goal specific [than previous years]. I did a lot of mental rehearsal, and we really applied it there. We practiced for distractions. Competition simulation was a big part of our training. (p. 35).*

**Training and rest.** Another major finding related to the additional demands that accompanied world champion status. Around 67% of athletes felt that “training time was adversely affected by the additional demands” (p. 40). To continue their elite level performance, these world class athletes had to learn how to handle the additional demands and distractions that followed their first world championship. One athlete stated:

*It's harder to find time to plan your training programs, to have all the free time you want. Before I won, that's all I had to do [train and rest]. I would arrange my own schedule. Now I have to make my training schedule according to those [additional] demands, and that's hard. The problem was sometimes I didn't know whether I should train or rest (p.40).*

While specific experiences in overcoming the additional demands of world-class status were present, common themes were found throughout. Kreiner, Phillips, and Orlick (1993)

recommend the following guidelines for future elite Olympians to maintain a high level of success.

1. Stay in control of your life: (a) Set priorities for your time and activities; (b) take care of your own needs and the needs of your loved ones first (e.g., needs for rest, relaxation, proper nutrition, physical activity, and simple joys); and (c) keep things in perspective.

2. Set a plan for dealing with demands: (a) Expect additional demands and create a system for dealing with them; (b) decide how many demands you can reasonably handle at different times of the year; (c) establish times when you are not available for any external demands and stick to it; (d) approach demands that you want to accept as opportunities and set a reasonable time limit for them; (e) find a trusted person to act as a screen or buffer to take calls, deal with arrangements, book appropriate times, say "no" to unwanted demands, and set a limit on appropriate demands; and (f) accept a reasonable number of demands that are important for you, and let the others go.

3. Respect the patterns that allowed you to excel: (a) Remember the basics about how you got there; and (b) reflect on what allows you to excel (e.g., hard work, adequate rest, staying positive, believing in yourself, accepting new challenges, being well prepared mentally and physically, and enjoying what you are doing).

4. Plan strategies for dealing with distractions: (a) Focus on what you want and on what you can control; (b) let the demands you have faced help prepare you for the demands you will face; and (c) draw from the wisdom of others in planning your path (e.g., other athletes, relevant readings, mental training consultants). (p.46)

Although elite golfers may experience different distractions and demands than these former Olympians, the current study will explore the experience elite golfers have in overcoming the distraction that accompanies elite golf status (e.g. the spotlight).

### **Research Questions**

The primary aim of this study is to investigate the lived experience of elite golf professionals as they practice and prepare for tournaments over time. Specifically, the study will address the following research questions: 1. What practice strategies (motivational) and methods (technical) do elite golfers perceive to be most effective to improve performance and when they engage in

this training, what are their experiences? 2. What are the challenges that elite golfers face in their training and how do they report their experience in overcoming these challenges? 3. To what extent do elite golfers report variation in their training methods and how does the perception of variation impact their experience?

## **CHAPTER 3: METHODS**

### **Approval for the Study**

To insure the safety of the participants in this study, an application was sent to the Campus Institutional Review Board (IRB) at the University of Missouri. There were no anticipated risks to the participants. Still, given the fact that these participants were at least 18 years of age, informed consent was provided. This document found in appendix A on page 133 was provided to each participant and third party connector before they agreed to the interview. Campus IRB determined the study met the criteria for exempt approval.

### **Research Design and Methodological Approach (phenomenology)**

As notably expressed by Dale (1996), “Proponents of existential phenomenology would view an athlete as being indissolubly linked to his or her world whether it be in practice or in competition. The two (athlete and world) do not exist apart from each other and each individual and his or her own world are said to constitute one another...” (p.309) Thus, in the past few decades an emphasis has been placed on phenomenology and other qualitative methods in sport psychology research (e.g., Cohn, 1991; Dale, 1994; Eklund, Gould, & Jackson, 1993; Hemery, 1986; Orlick & Partington, 1988; Parker, 1994; Scanlan, Stein, & Ravizza, 1989).

Phenomenology was originally created by German philosopher, Edmond Husserl (1859-1938). Husserl believed that a human’s “capacity for consciousness” required a different approach than that used in the psychical sciences (Wertz, 2011, p. 52). Phenomenology has drifted from traditional scientific inquiry in that it goes beyond the “why” and gets to the “what” thus emphasizing vivid first person accounts of human experience (Valle, King, & Halling, 1989;

Dale, 1996; Wertz, 2011). Specifically, phenomenology attempts to describe “the common meaning for several individuals of their lived experiences of a concept or a phenomenon” (Cresswell, 2013, p. 76). Others have simply referred to phenomenology in research as an emphasis on “the things themselves” (Crotty, 1998, p. 78).

In the current study, the phenomenon under investigation is the experience of elite golf professionals as they undergo extended periods of highly effortful practice in an attempt to maximize their performance. While elite skill acquisition has been quantified on several occasions (see literature review), very little research has investigated the experience of elite performers, namely, elite golfers as they undergo this extensive training. From a practitioner standpoint, this research may be helpful in providing insight into the mindset of elite golfers as they face obstacles in a way that quantitative approaches may not address. As indicated by Creswell (2013), “Knowing some common experience can be valuable for groups such as therapists, teachers, health personnel, and policymakers (p.82).

In order to fully investigate this phenomenon, it is necessary to attempt to bracket the researcher’s prior experience, knowledge, and biases to “directly experience” the phenomenon before making meaning (Crotty, 1998, p. 79). If done correctly, there is a potential for either new meanings or an “authentication and enhancement of former meaning” that may immerge from the data (Crotty, 1996a). In an attempt to minimize these biases, the researcher, must be reflexive throughout the entire research process. I address this issue next.

## **Researcher as Instrument**

My experience in playing competitive junior and high school golf is significant in regard to this research project. It was in those years that I became familiar with the culture relating to elite level golf as well as with my personal psycho-emotional states that accompanied positive and negative outcomes on the golf course. For a long part of my junior career, I had the goal of playing golf professionally on the PGA tour. It was in having this goal and the lifestyle associated with it that I became aware of the hardships that many junior golfers go through when they face adversity. While engagement and focus are infused in the golf culture by common phrases such as, “stay in the moment,” “one shot at a time”, and “stick to your pre-shot routine,” there are also strong external motivators that pull golfers away from the moment. These include parent expectations and a cultural emphasis on winning. During my junior golf career I regularly saw evidence of these motivators. For example, the father of one of my competitors had a habit of walking ahead of our group so he could kick his son’s ball out from under trees or otherwise move it into a more advantageous lie in order to give his son a competitive edge.

Furthermore, while many opportunities in golf (e.g. scholarships, tour exemptions) are provided based on a golfer’s score or standing in a given tournament, it is difficult for golfers at all skill levels to stay completely invested in the moment. The greater the competition, the more emphasis is placed on results. In my experience as a junior golfer, the more time I spent working toward my golf game and competing at higher levels, the more I wanted and expected to do well. This pulled me away from the process of getting better and led me down a path of quick fixes and frequent frustrations.

My personal experience with golf has been further expanded through my work as the mental performance coach for the men’s and women’s golf teams at the University of Missouri. I

have worked with the women's team from September of 2013 to the present and with the men's team from spring of 2015 to the present. I have been exposed to a multitude of issues relating to performance improvement and have witnessed the hardships that go along with performing below expectations. Each golfer responds to hardship differently depending upon their personality and mental maturity.

As it relates to the current study, I have worked with players and coaches on a team and individual basis to teach mental skills and strategies for both competitive golf rounds (e.g. qualifying and tournament play) as well as for practice. I have advocated for randomized practice and competitive practice in my conversations with players and coaches. Given that I have both inclination and experience that may directly relate to this current research, it is necessary to be aware of this potential bias and to fairly collect and interpret the data. The major challenge I face in gathering these data is to avoid seeking conclusions that support my own experience and beliefs.

## **Participants**

In phenomenology research it is necessary to obtain data from a group of individuals who have all experienced the phenomenon under study (Cresswell, 2013, p. 81). To best understand the phenomenon of rigorous and extended training among elite level golfers, it is necessary to employ criterion-based sampling, based on elite status in golf (i.e. golf professionals). The criterion sample for this study will consist of 5 elite male golf professionals who are regularly playing and competing on a professional tour. Given the researcher's current position with the Men's golf team at the University of Missouri (MU), former MU golfers who are competing professionally were contacted. Additional access was achieved through connections with third

party individuals (e.g. swing instructors, college golf coaches) who are in contact with elite golf professionals. Names have been changed to protect confidentiality. See Appendix F for detail on each player.

## **Data Collection**

In accordance with other phenomenological studies, in-depth phone interviews lasting 35-50 minutes were conducted with each participant. Hayman, Borkoles, Taylor, Hemmings, and Polman (2014) conducted an Interpretive Phenomenological Analysis (IPA) with elite adolescent golfers in England, which was used as a guide for this data collection. As indicated by Hayman et. al., (2014), it is important to make the interviewee feel comfortable and establish a bond (Rapley, 2004; Smith and Osborn, 2003). Similarly, the experience of the researcher and the prior knowledge that he possesses relating to golf and golf culture provided him with common language and contextual knowledge that helped in building rapport with the interviewee. To establish a bond with the interviewee the researcher started each interview with an informal discussion relating to how they first started playing golf (Hayman et. al., 2014).

Following the rapport building, as in line with phenomenology research, non-standardized interviews where broad and open-ended questions were conducted (Pollio, Henley, and Thomson, 1997). These questions are as follows: What practice strategies have you found to be most effective in improving your game? How often do you practice *these* strategies versus other things (e.g. maintenance)? Has anything ever gotten in the way of practice? Furthermore, a series of follow up questions will be asked to help clarify and extrapolate the unique experience of each interviewee (Pollio et. al., 1997). Here the goal was to stay with the interviewee and capture his experience as opposed to attempt to prove or validate any pre-held assumptions that

the interviewer may hold (Dale, 1996). Interviews took place on convenient days based on the schedule of each participant. Each interview was recorded and transcribed.

### **Data Analysis**

In accordance with Pollio et. al., (1997), an existential phenomenology approach will be used in the current study. Following data collection, the researcher will highlight “sentences, or quotes that provide an understanding of how the participants experienced the phenomenon.” Once the relevant statements are highlighted, the researcher will develop “clusters of meaning” that will be coded in to themes. Eventually the researcher will attempt a summative statement that incorporates the various themes coded and that captures the “essence” of the phenomenon (Creswell, 2013, p. 82). In an attempt to describe the unique experience of these PGA-Tour professionals as they reflect on their practice, it is necessary for the researcher to bracket his previously held assumptions while also serving as the expert of the data with the ability to relate parts of the data to the data as a “whole” in a process known as “the hermeneutic circle” (Pollio et. al., 1997).

Unlike early philosophical discussions of bracketing, in order to fully describe the phenomenon, there must be a degree of relevant knowledge brought by the researcher to effectively interpret and make meaning of the data. As described by Pollio et. al., (1997), “Rather than suspending worldly knowledge, the interpreter applies a world view such that a phenomenological understanding may emerge” (p. 48). The current study benefited from the researcher’s knowledge about golf culture and practice strategies by allowing him to understand and interpret the subtle nuances in the data that may not be obvious to others. However, this inside knowledge has the potential to be biased if left unchecked. In an attempt to help reduce

bias, the researcher utilized the “interpretive circle” (Pollio et. al., 1997, p. 38). Here, the researcher organized a research team to provide accuracy checks throughout the research process. The research team was comprised of two doctoral students who were provided training before working on the project.

Still, phenomenology research requires some interpretive freedom on the part of the researcher to make meaning of the data. Thus, the researcher will incorporate the use of “the hermeneutic circle” and make meaning from the data by immersing himself in it so that he is able to provide context (Pollio et. al., 1997). According to Pollio et. al., (1997), “The hermeneutic circle overcomes the seemingly linear character of reading by having an interpreter understand earlier portions of the text in relation to latter portions and, conversely, understand latter portions in the context of proceeding ones” (p. 49-50). This non-standardized approach seems inevitable but nevertheless has been a source of much criticism within the scientific community. Pollio et. al., (1997) responds to this criticism:

This orientation to interpretation is motivated by a desire to remove the scientist (i.e., the interpreter) from the research enterprise. Ideally, content could be analyzed solely by recourse to definitive rules and procedures such as might be instantiated in a computer program. Since the rules for category formation will reflect the analyst’s theoretical framework, it is difficult to see how such a project could even begin in a purely objective way... (p. 38).

Given the nature of the current study and the implications it may have for practitioners, it is necessary to explore the lived experiences of *these* golfers and explore the meaning that emerges from their accounts rather than objectively quantify practice effectiveness.

## **Trustworthiness**

To ensure trustworthiness, the researcher will use several strategies. As previously indicated, the researcher must remain reflexive throughout the entire research process so that potential biases can be addressed (Crotty, 1998). This has been attempted thus far in the reflexivity statement indicated earlier. Additionally, an “interpretive circle” will be used to minimize the potential for researcher bias (Pollio et. al., 1997) Furthermore, steps will be taken to insure confidentiality and secure storage of data.

## CHAPTER 4: RESULTS

*You've got to look at yourself in the mirror and [say], 'Okay right now I'm a pretty good driver but my bunker game stinks. So right now I'm going to work this week on being a better bunker player or a chipping player or getting it up and down better than I'm doing. I've got to chip it closer to the hole, or I'm really going to work at putts inside of five feet because I missed a few short ones this week. I'm not going to let that happen next week.' You've gotta come up with games...come up with ways to get better. (Frank)*

As in this quote, Frank and all the participants in this study described their experience with practice in multilayered and multifaceted terms, often simultaneously referencing strategy and technique, and often revealing singular experiences that relate to multiple themes at once. When probed about the challenges they faced, participants responded with strong positive language that related to what they were doing to improve. Strategies used to improve performance were also strategies that were used to overcome challenges. Variation was used to facilitate engagement while also being used to simply “get better.” For the participants, practice is about improving performance and they described every aspect of that process fluidly throughout the interviews. As a result, central themes emerged across research questions and reflect the participants' core strategies to become the best they can be. These central themes are as follows: a) tailoring practice, b) achieving balance, c) staying engaged, and d) being proactive. Because these themes manifest throughout the participants' interviews and across research questions, the findings are presented by theme (see figure 1 below).

Research questions:

1. What practice strategies (motivational) and methods (technical) do elite golfers perceive to be most effective to improve performance and when they engage in this training, what are their experiences?
2. What are the challenges that elite golfers face in their training and how do they report their experience in overcoming these challenges?
3. To what extent do elite golfers report variation in their training methods and how does the perception of variation impact their experience?

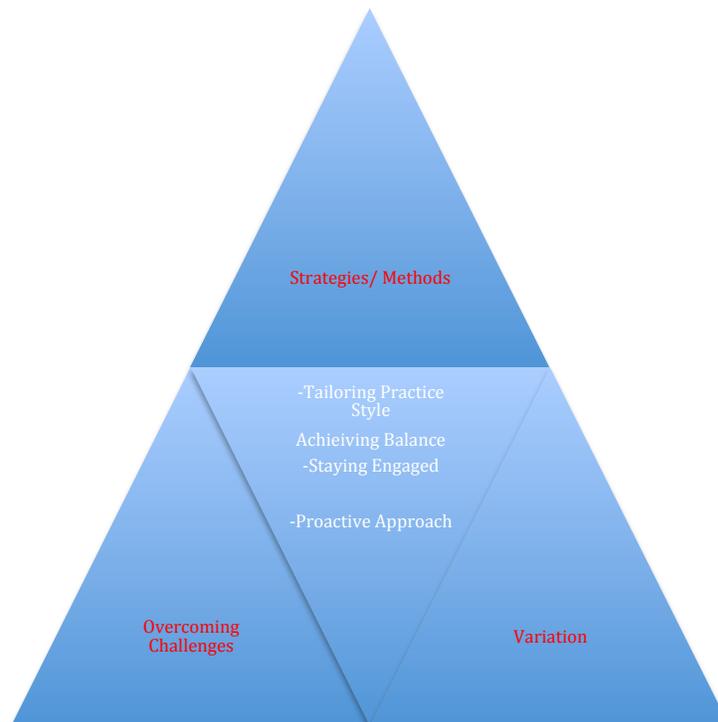


Figure 1. Thematic Relationships to Research Questions

## **Data Analysis Strategy**

In accordance with phenomenology methods, the researcher conducted non-standardized interviews with the study participants, first asking broad, open-ended questions, followed by a series of follow up questions to help clarify and extrapolate the experience of each player (Pollio et. al 1997). See Appendix C for the interview protocol. Given the nature of the questions and the substantial experience each participant had with practice, the interviews were rich with vivid descriptions of the participants' practice strategies, thoughts, and challenges as they reflected on their practice experience. Additionally, they recounted plentiful and detailed stories that explained specific instances or scenarios that impacted practice. Participant experience varied widely depending upon a multitude of factors (i.e. age, success level, personality). To organize the data in a way that explores "the common meaning" of practice among golf's elite, the researcher followed an elaborate coding and tagging process (Cresswell, 2013).

## **Data Analysis and Coding**

Following the proposed data analysis protocol detailed in chapter three, the researcher first read through the transcripts several times. The data were then tagged and coded using Dedoose, a software analysis program. The researcher first highlighted quotes that "provide an understanding of how the participants experienced the phenomenon" (Pollio et. al 1997). Next, in accordance with Creswell (2013), the researcher developed "clusters of meaning" that related to the overarching research questions. Each cluster was then coded according to theme. During that process, the researcher also utilized codes and child codes to specifically label the data as they

related to each research question. Excerpts matching the descriptors of the initial code were then highlighted according to code. During this process, it became clear that in a majority of instances, a particular excerpt would relate to multiple codes and or child codes. See Table 1 for a list of the initial codes and the number of initial excerpts associated with each. Each excerpt was marked according to code(s) and an example of this process is provided in Appendix A

**Table 1 Initial Codes from Tagging Process**

<b>Research question</b>	<b>Initial Code</b>	<b>Sub Code</b>
<b>Q1 (89)</b>	<b>Methods/technical (47)</b>	<b>Efficiency (11)</b> <b>Fitness (4)</b> <b>Maintenance (9)</b> <b>Practice rounds (4)</b> <b>Short game (3)</b> <b>Simulation (11)</b> <b>Target (3)</b> <b>Technical (7)</b> <b>Time/effort (25)</b> <b>Typical day of practice (7)</b>
	<b>Strategies/motivational(54)</b>	<b>Peaking (2)</b> <b>Believing in yourself (3)</b> <b>External (5)</b> <b>Internal (4)</b> <b>Gaining confidence (4)</b> <b>Goal setting (12)</b> <b>Guidance from other pros(6)</b> <b>Knowing yourself (19)</b> <b>Mental game (15)</b> <b>Making it fun (11)</b> <b>Pressure Practice (10)</b> <b>Rewards (4)</b> <b>Taking time off (7)</b> <b>Wanting it (7)</b>
<b>Q2 (23)</b>	<b>Distractions (7)</b> <b>Engagement (5)</b> <b>Less fun parts of practice (6)</b>	
<b>Q3 (4)</b>		

Following this tagging process, the data were further analyzed and grouped according to central and sub-themes. See Table 2.

**Table 2: Thematic Findings**

<b>Central Themes</b>	<b>Sub-Themes</b>
<b>Tailoring Practice Style</b>	<i>Knowing yourself</i> <i>Being selective with following advice</i>
<b>Achieving Balance</b>	<i>Technical vs. Strategic</i> <i>Work vs. Life</i> <i>Maintenance vs. Improvement</i>
<b>Staying Engaged</b>	<i>Visualization</i> <i>Goal Setting</i> <i>Building Confidence</i> <i>Simulation</i> <i>Variation</i> <i>Energy Management and Peaking</i>
<b>Proactive Approach</b>	<i>Navigating time constraints</i> <i>Making practice efficient</i> <i>Working through poor performances</i>

## **Participants**

According to Hertz & Imber (1995), research on elites has been neglected based on the innate difficulty in accessing a highly select group of individuals. Based on their findings, Carless & Douglass (2013) adopted “flexible and adaptable” approach that provided alternative methods to gather data that respected the need for quality research while also “taking in to account schedules and geographic location” (p. 703). The highly exclusive nature of elite golf professionals was a challenge of this research project and due to such limited access, five participants PGA Tour players comprise the participant group. While this number is on the low end of the phenomenological threshold set forth by Cresswell (2013), the data generated from *these* participants is robust and appropriately represents the phenomenon of elite golf practice.

For the purposes of this study, the researcher used criterion-based sampling to select four PGA-Tour professionals and one former PGA-Tour professional who now plays on the Champions-Tour (the top professional tour for men over the age of fifty). As indicated in chapter three, the researcher accessed these players through third party members (e.g. golf coaches). Participants in this study range in age from twenty-eight to fifty-three. The amount of time spent on tour for each participant ranges from three years to three decades. The following descriptions highlight the level of success and experience of the participants. Their names have been changed to protect their identities.

**Frank.** Frank is 53 years old and has been a professional golfer for more than three decades. Prior to competing professionally, he was a highly successful college golfer, helping his team win the NCAA championship. As an elite amateur, Frank was invited to play for the United States Walker Cup team: top U.S. amateurs who compete against the top amateurs from Great Britain and Ireland. After the Walker Cup, Frank turned professional. During his PGA career, Frank won four times between 1991 and 2000 and achieved a top 50 world golf ranking. His best finish in a major tournament was sixth. Frank now competes on the Champions Tour, the most competitive tour in the world for men over the age of 50, where he has three tournament wins.

**Andrew.** Andrew is 29 years old and has had mixed success in his golf career. In 2014 he earned PGA-Tour status after finishing in the top 20 on the Web.com Tour, a professional tour one level below the PGA-Tour that awards PGA-Tour status to selected members for one year, based on their end of the season ranking. By the end of 2014, Andrew lost his PGA Tour card by finishing outside the top 150 in world rankings. Andrew went back down to the Web.com Tour and regained his PGA Tour card in 2016. Andrew won his first and only PGA Tour tournament that year, and as a result, was granted PGA-Tour status through the end of the 2018 season. Andrew has played in one major event on the PGA Tour and failed to make the cut.

**Steve.** Steve is 30 years old and, in 2016, became one of the top 30 players in the world. He turned professional in 2009, successfully competing on the Web.com Tour to qualify for the PGA in 2013. Since turning professional, Steve has never lost his PGA-Tour card. Consistent and steady play has propelled Steve's game, giving him strong major results and top 10 finishes on two occasions. Steve's recent performance has slumped somewhat compared to his remarkable 2015 performance when he won for the first time on the PGA-Tour.

**Josh.** Josh is 31 years old and ranked in the top 20 professional golfers in the world. Of the participants in this study, he is the only one to be born outside the United States. He turned pro in 2007 and played for five years on the mini-tours. His first full year on the PGA-Tour was in 2012, and in 2014 Josh started to play some of the best golf of his career, finishing in the top 50 in the FedEx Cup standings. In 2016, Josh won two events including a World Golf Championship. Behind the majors, World Golf events are regarded as the most prestigious events to win and often have the most talented players playing in the field. Josh finished the 2016 year ranked in the top-twenty in the world rankings.

**Zach.** Zach is 28 years old. He qualified for the PGA-Tour in 2014 and made 11 out of 22 cuts and finished just outside of the top 150 in FedEx Cup points. He failed to keep his PGA-Tour card for 2015. However, in 2015 he went back to the Web.com Tour and won for the first time, thus giving him exempt status for the PGA-Tour in 2016. Since 2016 Zach has been playing on both the PGA-Tour and the Web.com tour and has not quite achieved consistent eligibility on the PGA-Tour. His best finish on the PGA-Tour was a tie for 18<sup>th</sup> place in 2016.

## **Thematic Findings**

The following subsections will be devoted to the central themes and subthemes that emerge through analysis of the data: **Tailoring practice** (*knowing yourself, being selective with following advice*), **Achieving balance** (*technical vs strategic, work vs personal life, maintenance vs improvement*); **Staying Engaged** (*visualization, goal setting, building confidence, simulation, practicing with variation, energy management and peaking*); and **Being Proactive** (*navigating time constraints, working through poor performances*).

**Tailoring practice.** Without exception, each of these elite participants recognizes and emphasizes the importance of practicing in a way that works specifically for them. This main theme emerges throughout the data, across responses, and readily subdivides into two subthemes: *knowing yourself* and *being selective with following advice*.

**Knowing yourself.** Josh describes his thoughts on the individual nature of practice as follows:

Everyone practices very differently and I mean it's like what you said, once you've made it to the PGA Tour, you've not mastered skills but, I mean, obviously your skills are at a point where it's good enough to compete with the best players in the world. Practice is tough in the sense like yeah how do you keep getting better? So you have to keep kind of trying to push yourself. Say you're a great bunker player, how do you become a better bunker player? I mean do you practice or do you just sit on the couch and (laughs). I mean practice is so individualized. You got guys like PG 1 and PG 2 that practice ten hours a day, and then you've got guys like PG 3 that barely ever practiced and have had great careers. So I mean it's such a interesting, there's no right or wrong reason. I guess the main point is you need to figure out what works best for you as an individual.

As Josh indicates, significant differences in practice time alone are present among elite golfers.

Yet he goes on to elaborate, comparing golf to other professional sports and detailing why he believes golf, in particular, requires a different approach for everyone:

The thing about golf that makes golf practice different than any other professional sport is you're by yourself. You don't have teammates, you don't have a set of ten coaches telling you where to be, telling you how to go practice. Golf, if you don't want to practice you don't practice. If you want to practice ten hours a day you practice ten hours a day. Golf, you have to be very self-motivated, disciplined to do. Whereas say you make the New England Patriots team, you're told when to be at practice, you're told kind of what to do, when to eat, when to do this. Golf is not like that. You have to decide to do yourself. That's what makes it so unique and why very many people do it differently. I think that's the biggest challenge of what we do, is coming up with what works for you. I mean, PG 1 just walked past me. If I practiced exactly the way he did, I'd probably want to quit. And if he practiced the way I did, he would feel like he was not prepared. So everyone is very different. The number one thing in practice and being good, being a professional golfer, is you have to figure out what works best for you and stick to it and not be misguided by people and try and be like someone else. I mean you have to really be all in of your own preparations.

For this player, the individualized nature of golf requires autonomy. Practice is not mandated and one's job security is not dependent upon making team practices. Further, Josh recognizes that golfers have tendencies to emulate others and this can sometimes lead to being "misguided" and ultimately one must "figure out what works best for you."

Similarly, Steve recognizes the importance of making practice unique to the individual:

Probably just trying to figure out what things you're good at what things you need to improve on and trying to stick to your guns has probably been the biggest thing I've found. Just trying to try not to completely change how you do things or how you approach it just because someone else does it a different way. I mean I think everybody's shown through golf there's no one way to do it.

Similarly, Zach also recognized that, for him, practice is more successful when he utilizes an individual approach as compared to his college days where the team practice was the same for everyone:

I feel like I can manage my own game umm I feel like I you know I do a pretty good job umm you know critiquing myself constructively and umm knowing my strengths and weaknesses being able to put in the time work on those weaknesses but at the same time continue to have those strengths and maintain. Whereas the other sort of coaching type college stuff was not really geared toward one individual more what the coach thought the whole team needed.

In addition to individualizing the structure of practice, Andrew commented that the amount of time required to practice enough to compete at the highest level may differ based on a player's talent level:

There are a lot of guys who don't need to put in too much effort or time umm to practice effectively for them they just have a talent level that allows them to do less... I was talking with a guy named PG 12 who is just an amazingly talented ball striker. He's worked really hard on it. He probably has to put in a good bit of effort on his short game and putting but he's an amazingly talented ballstriker and he was overhearing me. I was doing a little junior clinic and one of the kids asked a question out loud said, 'how much do you practice'? And I said you know 'sometimes like on a light day I'll just go for you know for three hours in the morning or the afternoon but you know sometimes like on a full day you know I'll spend ten hours working on my game' and PG 12 walked over and he said 'if you're spending ten hours you've gotta be moving backwards like ten hours cannot be a productive day'. He said he only practice for one to three hours at most and yeah I just thought that's amazing.

When discussing individual approaches to practice, one participant admitted it may be enticing to try to adopt a new or different personality characteristic when recent results are less

than ideal. Frank talks about his experience with trying alternative styles that did not necessarily fit with his personality:

I remember Dr. SP who was Sport Psychologist at the University of North Carolina. I worked with him some later in my career. He said he had a great line for me. He said, 'You need a little more prick in you.' You know if you look at all the great players they have a lot of prick in them. You know they have and it's true cause it's hard to change your stripes. You are who you are, and I've always thought maybe if I was more of a prick in my career, I could have won a few more tournaments....But you know, I am who I am.

***Being selective with following advice.*** Although the data indicate that practice should be unique to the individual, three of the participants specifically mentioned the importance of learning from other pros. However, they were selective in the way that they incorporated new elements to their practice. Steve describes what works for him in this regard as follows:

You know sometimes when you get out you get to play with some of the top players in the world and kind of watch what they're doing and how they approach it, you don't necessarily want to sit around and copy them because you know, I may not have the same ability or same swing, but you try to draw some things from them that you can work on.

Similarly, Zach describes his experience learning about other players practice drills and incorporating some of these new drills to his own practice regimen:

Certain other players that I've kinda become friends with and kind of pick their brain on how they practice and how they work on certain parts of their game what kind of drills they do. [I] kinda figure out what they're doing and kind of take my own version of some of that practice and apply it to my own. So it's evolved over time as a professional, but I never would have known any of that type of practice as an amateur or as a college athlete. It's obviously different being a professional. I mean that's my livelihood. that's what I do to kind of get ready and know that I'm on my game.

Both Steve and Zach were able to select specific strategies from other pros that matched with their playing style and personality. Similarly, learning from other pros was an integral part

of the development process of another participant. Frank reflected back on his first few years on tour and how he utilized the players at the top of the game to help with his own development.

My biggest goal when I first started the tour was to play practice rounds with great players. So my first two years I would ask PG 4, 'What's your schedule? What are you playing?' He [would say], 'I'm playing you know in Hawaii,' or 'I'm going to Phoenix.' [And I'd say], 'Can I play a practice round with you Tuesday morning, 9 o'clock with PG 5?' And just it seemed like I played a bunch of practice rounds with those guys. Boy I played with great players. I would ask you know whoever it was, PG 6 to PG 7 and PG 8 to play with the best, cause that's how you learn. You learn by playing with these guys. They were great. And also when you got paired with them in a tournament, especially being a rookie or being a new player, you're not as in awe of them when you get on the tee. When you're playing with them for the first time, you've already played with them in practice. So I thought that was very important and was something that really helped me out when I was young, starting out.

For Frank, it appears that he valued not only the lessons learned from playing with great players, but more so the process of feeling comfortable around great players. He recalls feeling more at ease in tournaments when he was teeing off with players he had already played with and gotten to know. He elaborates on this process by saying:

When I first got out there I didn't know anything and I was just a young kid out of college trying to make it, and you know I didn't have a whole lot of routines. I didn't have a whole lot. I didn't know what the hell I was doing and I just made sure I hung around with great players, played practice rounds with great players got in got in that vacuum of greatness and I think that in the vacuum of greatness. I became a good player because of that.

To Frank, simply being around and observing other great players had a positive impact early in his career. Other participants expressed similar thoughts on their experience, affirming that some of the major lessons learned from these PGA Tour veterans were made through observation rather than through overt conversation. Steve talks about playing with PG 9 and learning through observation that the veteran didn't let poor weather conditions affect his game:

On Saturday it was super windy and terrible outside. I mean, [I] wasn't playing all that great. I kinda hung around and made a couple birdies late. [But PG9] ended up beating

me by a couple and it was kind of one of those things made you learn how to be a little bit more patient.

**Achieving Balance.** The data indicate that these participants are constantly working to achieve balance during practice. They report that, when practicing, they have to decide what practice habits are most effective and how they should structure these habits on a day-to-day or week-to-week basis. As it relates to the subthemes, balance was found to be important in terms of the *technical versus strategic* aspects of practice, in *maintenance versus improvement* of play, as well as in balancing practice and other elements of the participants' lives, in other words, *work versus life* balance. Each sub-theme is discussed in depth below.

**Technical vs. strategic.** In order for these participants to get the most out of practice, they had to think introspectively and organize their practice in a way that was the most beneficial to them. All participants spoke of their need to practice technical elements—such as those relating to a particular golf swing or putting stroke—while also finding time to incorporating strategic elements. Both of these were seen as important but were recognized to be separate elements of practice that required a participant's full attention. For Andrew, the technical focus has been something he recently incorporated in practice. He outlines the technical elements of his current practice as well the strategic elements:

Just recently like within the last couple years of my professional career I've added a new kind of element to my practice. My mental coach who you know calls it massed practice. My swing coach calls it blocked practice. I'm not sure where the term blocked came, from but blocked practice where I just I actually spend time you know, working on my mechanics and not really worrying about where the ball goes necessarily. Sometimes [I'm] just even inside making rehearsal swings with a mirror or out on the driving range going through like a progression of little practice swings. So that's been something that has you know recently been added to my practice as I've started out started working informally with an instructor just two years ago. Now I'm at a stage now where I'm trying to combine all three of those things. I still like to play golf. A lot of times being out on the course is a great way to practice I try to do a lot of goal oriented or target oriented practice. And now I've added that third element where I do some blocked practice or

massed practice where I'm just working on mechanics and not so much worrying about the results of where the ball goes.

As Andrew mentioned, the technical approach is relatively new for him and incorporates a focus on swing mechanics instead of "where the ball goes." Then, separately, he utilized "target practice" and practice rounds where he does focus on where the ball goes.

The participants spoke about doing the technical drills first and then incorporating simulation strategies. Andrew comments on three elements of his golf practice and specifically references One example of this was Andrew's putting practice. Andrew revealed the following:

I've actually started now for the first time really ever this past summer. I was struggling a little bit with my putting and I started noticing that my stroke was just a little bit off. So, I've actually started doing a little bit of massed practice with my putting stroke. I put some tees down in the green to monitor my stroke path to make sure that it stays on a good path, not getting off kilter. So I do a little massed practice with my putting. I have to not as much as I would with my full swing, by any means, but a little bit. So I'll do some of my massed practice and then set up some different fun putting drills that I like to do—just keep a little score.

Here Andrew refers to the technical work that he does as "massed practice." He places golf tees around his putter so that if his stroke is imperfect, he will hit a tee and get immediate feedback on his technique. After doing this technical drill, he switches to drills that are more "fun" as he works to incorporate pressure scenarios in practice.

It is worth noting that similar to Hayman et al., (2014), ), a majority of the golfers interviewed stressed the importance of practicing short game as they reached a certain level of golf performance. Short game represents the part of golf and golf practice that deals with shots around the green as opposed to longer shots off the tee and from farther away. According to world renowned Golf Sport Psychologist Dr. Bob Rotella, "Skill with the scoring clubs" which he defines as, "the clubs from the 8-iron through the wedges and putter," represent, "the biggest

difference between pros and amateurs” (Rotella, 2008). Zach, Steve, Frank, and Josh mention the importance of practicing short game:

Zach: ...when I first started playing [practice shots] were 90% about hitting balls--hitting drivers--and 10% about hitting putts and chips. Whereas now I'd say probably about 80% [is] about working from inside 150 yards, 20% on hitting range balls with my drive. So it's been a complete 360 intentionally from when I first started playing to now I'm playing professionally.

Steve: Obviously your short game is pretty big, so you're trying to work on holing your short putts, good speed on your long putts, just trying to fine-tune everything so when you get to the tournament you're ready. You're not searching on Monday, Tuesday, Wednesday.

Frank: I think that when I have focused more on my short game, my results were always better. All our tendency is to hit balls, hit balls, hit balls, and not work on short game as much, but when I have done that [work on my short game] results have always seemed to be better. When I'm not hitting balls as much and I am just chipping and putting and working on my short game.

Josh: if I achieve nothing all day today I have to do forty-five minutes of putting so I do almost the same drills on a daily basis so I'll go in there I'll try and not get too distracted from other people and I'll get my 45 minutes in and then uhh I'll head to the to the range and hit some balls

Technical work, as reported by these participants, also had some psychological implications worth noting. For example, Steve recognized that he was struggling with his alignment when putting. He worked on this technical element to improve consistency, but also, he says, because he wants the improved putting technique ultimately to feel “normal” so that he “can just putt.” In this case, Steve describes an increased emphasis on the technical practice of his putting swing as necessary, given the fact that he did not feel “comfortable” with his alignment. Thus he articulates that when making a technical change that is significant, he recognizes there can be a time period where he may not feel comfortable. For him the data indicate that it is important to focus only on the technical aspect until he feels comfortable

enough to be able to execute it without having to think about it. This example illustrates a common theme: these participants balanced technical practice with strategic goals. In this case, practice until it feels “normal.” Zach details his experience with this:

... [I] go straight out to the putting green first, start out with a chalk line straight putt, and I hit--groove--my stroke a little bit. Then [I] find a left to right putt from three or four feet, but I use a crooked putter device, and find a four or five footer breaking left to right. [I] do a little chalk line there and then I putt right to left. Same thing, four or five feet [I] work on, and then I kind of work between the right to left, left to right, straight putt.

Then I'll find a different hole. I'll do a circle drill, three foot, four foot, five foot. [I] place four tees down. I'll make twelve three footers in a row and then step back a foot and make eight four footers in a row and then step back a foot and make four five footers in a row. Then I find a left to right putt and I put a tee down at six feet put a tee down at eight feet and a tee down at ten feet, and I hit six putts at each tee so eighteen putts total. I have to make twelve out of eighteen before I finish that drill. Then I go to the other side of the hole, find a right to left putt, six, eight, ten, same thing, make twelve out of eighteen and then I'm done with that. Then I'll do a ten footer breaking left to right at a different hole. I'll go ten foot, fifteen foot, twenty foot--put a tee at all three of those and hit six putts at each tee. I think I try to make eight out of eighteen on those. Then after I do that, [I] go to the other side of the hole, right to left, same thing and that's my putting for the day.

Zach mentions wanting to “groove” his stroke during the first part of his putting practice and then follow it up with some simulation practice where he has to make a certain percentage of putts depending upon how far away they are from the hole Andrew recounts his process of doing the technical work that he calls “massed practice” and then switching to hitting different types of shots.

If I'm home and I'm just gonna spend all day on the practice facility, those are the days when I'll really get in to doing some massed practice. I'll start the day maybe on the driving range and probably have somewhere between 100 and 200 golf balls with me and I'll go through and I'll do an hour or two hours of just massed practice where I'm really focused on my golf swing, working on it. Then however long I spend doing that, doing the massed practice, I try to do at least half that long if not fully that long again on the range doing target practice, where I'm just not thinking so much about my swing mechanics just really trying to locate targets and hit shots as if I was on the golf course.

Even when Andrew's primary focus is to practice, he is always thinking about ways to simulate tournament rounds and incorporate a situation where the outcome matters. In the following excerpt he describes his experience in incorporating practice rounds and how he structures his time during those practice days:

When I'm home and I play golf out on the course, I like to kind of mix it up. I like to go play by myself cause I can get a lot more done. I can maybe play two balls or drop two balls here or there and get some extra shots. But I always try to play one ball when I'm out on the course. I always try to play one ball and play it not necessarily like I'm in a round like if I was in a tournament, but I like to play one ball where I play to the hole and sorta keep a little bit of a score. [This is] just because I kinda like that feeling of having [to make] some putts--like maybe I played the hole poorly and I gotta have a putt to save a par or something. I like having that feeling because it's just very much like playing a tournament if I do it that way. Other times I'll have I have a couple of good friends that live [near] me here... couple guys who are on the PGA tour one guy who's aspiring to be on the PGA tour who's really good. So I've got buddies that I can play with. We have sometimes have just little fun matches. I don't think not too big or crazy, but it's always fun to have a little competition even when you're away from tournament golf. So if I'm gonna play from home, I may practice for a couple hours beforehand or or an hour afterwards or something. That's typically [it]: I'll just go through a mini version of of all the stuff that I've just described. I may do a little bit of massed practice a little bit of target practice, a little bit of short game, a little bit of putting but if I'm gonna play eighteen holes that would be kind of my focus for the day.

The data indicate that Andrew values going back and forth between the technical and strategic elements of his game. He plays practice rounds where he can hit "extra shots" to focus on technical work, but still choose to keep score with one ball as he would in a tournament.

Additionally, he mentioned practicing before or after his practice round.

The balance between technical and strategic practice is also dictated by the individual nature of the participant. Josh, for example, reports not being "overly technical" but still

recognizes the importance of doing some technical work for the purposes of becoming more confident. He emphasizes the need to use a putting device called “The Perfect Putter” and the balance he has between the technical and strategic (i.e. building confidence) parts of practice.

You roll balls down this device to see the putt going in. You’re training your eye to read the putts better. I’ll use a little chalk line to work on my alignment. The correct line that the ball needs to start on. So I’ll do a little chalk line thing and [then] I’ll hit some longer putts and [do] speed drills probably thirty to fifty feet. Just see if I can get them close to the hole for easy two putts. Then I’ll work on really short putts. Gotta make ten putts in a row from three feet. If I miss I’ll start again. I mean the number one goal in practice I guess I could tell you is to create confidence. You don’t want to practice if you’re always doing bad at something. Golf is a game of confidence so you need to find a way to get better at stuff so you become more confident. So if you’re putting and you keep missing, well go a little closer so you can keep making (laughs). So when it comes to my long game I guess I don’t really have any drills. I’m probably a little different than most guys about it. They work with stuff. I’m not very technical when it comes to that. I just like to go to the range and kind of get comfortable and walk away.

***Maintenance vs. improvement.*** The participants described structuring practice in such a way as to balance maintaining their abilities with working to improve them, based on the current state of their game at the time and thus their needs for either maintenance or improvement. There were times when participants spoke about doing drills in practice that simply maintained their level of skill and gave them confidence. Josh, for example, spoke about a putting drill that he does nearly every day that simply entails making ten three-foot putts in a row. This drill was not very hard for Josh, but he chose to do it consistently to give him confidence. On the other hand, there were some occasions where participants described practicing very hard to try and get better. This usually occurred after a good performance. The participants indicated excitement to get out and try to maximize their game because they felt that they were, as Steve says, “close to breaking through.” As a corollary to this, the majority of the participants reported compensating for possible deterioration in other aspects of play ability when one part of the game is singled out

and practiced exclusively for improvement. Given the nature of golf and how many different skills have to be executed at a high level to compete, these players admitted that sometimes when they work hard on one part of their game, another part might suffer. Recognizing this phenomenon and structuring practice accordingly was something the participants were very skilled at doing. Steve and Zach spoke about their experience with this:

Steve: Maybe if the wedges or the driver or the irons need more attention I'll spend a little more time on those and I might hit twice as many drivers or irons or wedges depending upon what needs the help so it. I try to try to maintain and then work on what needs some help generally when I'm on the range.

Zach: There may be certain times where I'm playing pretty well where I kind of forget or skip out on working on some chipping or whatever and then it comes out as a weakness. So you put a little more time in to it.

Zach explains further that he prefers a similar style of practice throughout the year but on tournament weeks he recognizes that practice is more centered around maintenance:

Tournament weeks are more there to kind of maintain what's established already. But yeah ideally practice wise I like to get pretty steady all year never get too high or too low just try to keep that steady practice regiment the whole time.

Further, these players describe that as they reached advanced skill levels, they found that sometimes just going out and playing a round of golf could be technically unproductive, and that instead, pure maintenance work was required and prioritized during practice. In reflecting on his practice habits now as compared to when he was younger Steve stated:

Well I probably spend a little more time on the practice range than playing. I love playing but sometimes I need to sit on the range, work on some maintenance, and I try to spend a little more time doing that than just teeing it up and playing and going home.

***Work versus personal life.*** The majority of the participants recognized that while golf is their profession and one of their passions, it is not their complete existence. In these interviews,

they expressed a need for other elements of their life to satisfy and fulfill them so that they could practice effectively when the time came to practice. Specifically, spending time with family was frequently mentioned as part of some participants' process. Josh, Steve, and Frank spoke more about family than the other participants. This may be due to the fact that Josh and Frank had reached a higher level on the PGA-Tour and had more experience in balancing work and life than some of the younger participants.

Josh: I think I practice less now than I used to because I want to maximize my time when I do practice, but also I travel much more now. I'm at home less, so when I do go home I want to spend time with my wife and my family more than just being on the golf course everyday. I mean when I just [went] out in college my number one goal was to get to the PGA-Tour and I was out there practicing and playing everyday. Whereas now, obviously it's just as important to me, but I have other things in my life as well, so it's a balance. I mean I'm married, so once you have a wife she complains if you go golfing everyday (laughs).

Steve: Got a family now so I spend a little more time trying to condense my practice and go out a shorter amount of time instead of hanging out all day at the golf course. It's a little different for me.

Frank: [you have to] be able to put the juggling act on and be able to wear a bunch of different hats. Cause it's you know times when you need to be selfish about your game and practice and times when you're dealing with your wife and your marriage, sometimes you have to deal with your children as they get older and you hope that they're doing okay and all those things factor in.

Whether it be a "juggling act" or finding "balance" these participants recognized the importance of maintaining a healthy relationship with their family even during times when they were spending a lot of time practicing.

**Staying engaged.** The data indicate that at least some of these participants, at times, experience a lack of engagement or even boredom during practice. This is not surprising given the longevity of a professional golf career and the long-term sacrifice that is required to continue

to get better after reaching an elite level. Additionally, these players describe an inherent difference for them between the intensity and all-consuming nature of competition play versus that of practice. Josh describes it this way:

I think practicing in general for me is fairly boring. I mean I love the competitiveness of playing in a tournament, having that pressure...

Despite this, Josh also recognizes that it is important to want to be out at practice because for him his desire to practice impacts his engagement.

Anything you can do to to make it fun, and that's the same with the range and with practice rounds... I like to to tell people golf is not my job, I'm just good at it. So I don't want to be like, 'aww I have to go work today and practice putting and chipping and hitting but it isn't work for me...' You have to make it enjoyable for when you go to the range. You have to want to go to the range and sometimes if you don't want to go—if you're not feeling it—then the best thing is not to go, 'cause when you're there you have to be fully engaged and committed and want to be there.

Other participants also admitted that some parts of practice may be more difficult to engage in than other parts. For Frank, it is routine or “stock” shots, which he describes this way:

You kinda fall asleep a little bit, you take it for granted. You go, 'well this is so easy this is no big deal.' You know my brain sometimes, my creativity, you know like I gotta hit a flop shot for a bunker from a lousy lie I'm not even thinking about it because it's just, 'I can do this.' You kinda picture the shot you're trying to hit, and then when you get over a little stock—little baby shot—that your little kid can chip it up there close, and you just kinda take it for granted. I would say [that] would be the problem there. That you don't picture the shot because it's so easy and you probably don't stick with your routine. You kinda maybe quick chip it 'cause it's so easy. I mean there's different things that happen. Probably with me it's the fact that I'm not paying attention enough. I'm not being as creative as I am with a difficult shot because think about it. You gotta go over this land. Am I gonna get over this tree? Or am I gonna get out of this bunker? Kinda picture the shot you want to hit and you can do it. And sometimes it's something so simple you just do it so fast that it's so easy that you screw it up.

Steve draws a similar comparison between engagement and task difficulty. He simply states, “Sometimes the less challenging you get a little lackadaisical with it.”

While Frank and Steve recognize and admit their tendencies to lose focus or be “lackadaisical” with some of the easier shots in practice, Andrew goes a step further. He not only notices that he sometimes does not focus as well on the range for a given shot as he would for the same shot in a tournament, he mentions a desire to bring about a consistent level of focus on the driving range that is similar to the focus required to play in a tournament:

One thing that I’m trying really hard, that’s a thing that I’m working on currently for the first time, is trying to be as engaged in every task. ...Like sometimes it’s easier on a 130 yard shot to an island green to be really intense and really focused and really, you know, intentional about wanting to go through all your process and a lot, than it is when you have a 130 yard shot you know on the driving range to a white flag that’s out there in the wide open umm and what I’m trying to do is realize that the better habits I can establish for the 130 yard shot to the white flag on the driving range the easier it’s gonna be for me to execute those habits when I have the 130 yard shot to the island green.

Whether it is the challenge of consistently practicing to prepare for tournaments or trying to stay focused during every shot, even the “stock” shots, these participants utilized the following strategies to help them engage and stay on task during practice.

***Variation in practice.*** Golf is a game that requires a lot of precision and sometimes it is the case that elite players will be working on technical changes for a minimum of 12 weeks if the change is not very complex (Montague & Milne, 2015). To work on a change this way, players often use the same club, hitting the same shot, while simply working on their technique. This part of practice is not necessarily the most fun or engaging, and thus players report that variation—or changing practice in order to stay optimally engaged—is essential. Andrew describes his experience working on “blocked practice,” or repetitious practice where a player

hits the same shot consecutively and focuses on technique, as opposed to “target practice” where a player primarily focuses on hitting the target and less on the technical aspect of the golf swing:

I still don't particularly relish the blocked practice or massed practice. I don't have a lot of fun, you know, when I'm really focused on the positions of my golf swing...I enjoy it to an extent because I can tell that I'm getting better, but it's just not fun for me in the way that, you know, going out picking out a target and ...seeing shot shapes and just kinda feelin it and then hitting shots. It's not fun like, you know, focus on position. So that's something that I have to really—I don't want to say I have to make myself do that—but more so that than the other kinds of practice like target practice, playing out on the course.

While Andrew says that he values both “blocked” and “target” practice, it appears that he is also aware that “blocked” is not as inherently engaging as “target practice” and is more difficult to engage in consistently. This experience was common among the other participants and they often would choose to switch up their practice to stay engaged. Steve describes it this way:

Sometimes I kinda lose track of what I'm doing if it's something monotonous. So [I've] been trying to change it up a little bit try to get your brain in to it, because it's something you need to work on. But if you do it a different way—probably like anything—it gets your brain going again, get's you to cash in to it.

There were many different ways that these participants varied their practice, having to do with both the type of practice they were engaging in as well as the level to which they would switch things up. Frank elaborates on this experience when describing his chipping practice:

I would put balls in the high rough, [and] step on them. My problem with chipping has never been the hard chips, the impossible chips, mine are the straight forward easiest chip in the world. Right in front of the green and you could use a pitching wedge. You could use a sand wedge. You could bump a five iron. The easiest shot--it's just a fifty six degree sand wedge. Just put it back in your stance, hit a little bump, and run and then flub it or just hit the worst little chip you know on a stock little shot. Almost like it's too easy. Those are the ones that I have to work the hardest on. [I] just play games like I wanna try to knock this thing wherever--whatever station I'm at around the greens--I was gonna try to chip her in. Just chip in you know think about chipping in. It's amazing how many balls that you don't chip in that end up within three feet. At first it's like, "okay, I'm trying to hit this chip in this hole. This is what I'm trying to do." And if you think about it enough, you know you're gonna maybe chip one in out of thirty. But the other twenty-

nine--I'll tell you there's not too many chips that you hit that bad if you're thinking about that small little hole. I'd just play games with the short game, play games with putting. I'll get other pros and play back and forth or we'll have a little match hitting at things to put some pressure on yourself I think is a good thing in practice.

As he indicated in the quote above, Frank would sometimes mess up the easy shots. In order to stay engaged he would either make the shot more difficult (i.e. stepping on it in high rough), or he would change his expectations. He went from simply chipping casually to attempting “to hit this chip in this hole.”

Frank describes varying practice on the driving range by hitting different shots with different clubs, as well as by hitting different shots with the same club:

Absolutely switch everything up. Switch targets cause you know it's pretty easy to kind of groove a shot after a while....and then you gotta switch [to] different shots. I'm gonna hit this wedge. I want to spin it to the left so I'm gonna work on that. I'm gonna hold this wedge, I'm wanna kinda cut this wedge, I want to hit it to different pins so if it's an 80 yard shot to a 100 yard shot I'm gonna switch clubs. I'm gonna hit a little shot. I'm gonna hit a thee-quarter shot. I want to work on that with my wedges. So all those different things and the same thing with, you know, going through the whole set from nines to a three iron and hit different shots at different targets to different yardage as well. You know you hit your seven-iron 170 yards and there's a target that's 150 umm just hit a few seven-irons and see if you can hit it 150. So hit a little chip seven, you might need to hit a chip seven out there at some point. So I always try to play games and always try to have fun with my practice—different shots, different targets. Not all the same all the time.

When Frank talks about hitting a seven-iron multiple distances, this would be a way to use variation by altering the shot type (i.e. full seven iron, chip seven iron). Alternatively, when Frank talks about switching targets (i.e. 80 yard shot, 100 yard shot), he mentions switching clubs. This is another way that these participants would switch things up in practice. Frank also indicated that he would work on one of these specific shots until he would “kind of groove” the shot and then he would switch.

Additionally Frank mentions that he would “try to have fun” during practice by working on different types of shots. Having fun while using variation was also an experience of Steve.

Here he reports using variation with short game shots and enjoying the process:

I can't sit in one spot very long chipping. I like to move around try to try to hit different shots. If there's a good chipping green it's usually quite a bit of fun for me just to try to do different things to see what kind of shots you can play. Maybe if the rough is long that week you're trying to trying to figure out how to chip out of it cause sometimes it's not very consistent.

Importantly, these players report using variation in practice not only to make practice fun, but because it is also very helpful in preparing for a tournament. Steve recognized that the rough is often “inconsistent,” and in order to gain a good feel for it, he had to try many different types of shots out of the rough. Additionally Steve spoke about using variation on the putting green and his experience with that:

I'll kind of bounce around--maybe [hit from] ten feet and [then] maybe hit a few long ones back and forth and then do some short ones again. Then I generally try to hole I don't know ten, three - four footers in a row before I leave just to get used to making them and holing the short putts. You know sometimes when you're out playing you don't always finish up your short putts when you're playing with your buddies, so it's kind of a get-you-back-in-the-groove and make sure you're holing your short ones too.

A more extreme case of variation would be to switch shots consecutively, one after another. Andrew talks about his experience in using such enhanced variation during practice:

Sometimes I'll just actually, like, in a way I almost pretend that I'm on the course, and just hit one...shot at a time and pick a different target every time and, you know, change clubs. You know [with] range finders it's so easy to shoot a flag or shoot a tree trunk or something, [to] be like, 'I got 190 yards to that tree trunk. I'm gonna do a...good high five iron out there.' Then shoot another flag and say, 'Okay I got 65 to that blue flag right there,' and just hit a little pitch shot.

Here, Andrew varied his yardage between each shot by roughly 125 yards. This is a drastic difference and requires a completely different type of shot (i.e. pitch shot).

In addition to varying practice structure and shot types, participants also indicated that they would vary other aspects relating to practice. Zach discussed making a change with his swing coach and the experience that he had in doing that:

I started to make a few changes. I ended up splitting ways with my coach hired a new coach. That was one major change that sparked some new thoughts new creativity and in turn kind of created some new motivation you know some fresh ideas in practice to put some excitement back in to the lull that had become my grind for that little time. It helped me kind of get over the hump and kinda work towards some new fresh things.

Additionally, Josh spoke about his experience in varying equipment during practice and his strategy and experience in doing so:

I'm testing a new driver today. So I'm just gonna warm up on the range. I'm not gonna spend too long on the range today hitting ball after ball because I want to get out on the course and test this club. I don't care how I hit it on the range because it's like I said, it's hard to focus a lot on a range that's just kind of a wide open space. Whereas you get on the course and it's tighter and you have to hit it in the fairway and there's trees and bunkers and water. So my goal today is to get out on the course to test some of my new clubs.

Whether the participant used significant variation or a more moderate amount of variation in their preparations, the data indicate that the use of variation helped the players stay engaged, have fun, and adequately prepare for tournaments.

**Goal setting.** Goal setting was utilized to help participants recognize certain milestones and thus fuel their motivation to continue to engage in practice. While some outcome goals were obvious to all participants (e.g. win a tournament, make the Ryder Cup team), these long-term goals were often downplayed during the interviews while the short-term daily goals were more prominent. One participant, who spoke of goal setting in long term, outcome respects, did not find goal setting helpful. When asked about goal setting Frank responded:

I tried that it didn't work. You know my goal here this year is to win four times, win a major, to play on the Ryder cup team. You set these goals out at the beginning of the year and everybody talks about that and I talked to every Sport Psychologist here you gotta set goals for yourself. What happens if you if you don't reach any of them? You know I mean [it] could happen. Not win all year but play pretty good, don't make the Ryder Cup team, you don't win a major, you don't win four times, you don't win once but you played okay. Is that still a shitty year? I mean well yeah I didn't reach these goals, so I don't know for me, it seemed like every time I tried that it didn't work. So I was like, 'You know what? It's fine. I just want to have a chance. I want to get in the mix.' I'd love to win obviously. I'm gonna win. I don't know how many I'm gonna win, but right now I wanna win. I wanna get back in the winner's circle this year. I'd like to win a major obviously. You know I've never won one on the PGA Tour but I still have some opportunities here on the Champions Tour. You know last year I didn't. I didn't win. I won three times the year before. Last year I didn't win but I had I had some chances. Didn't quite finish it off, but was it just a disappointing year? Not really. Still was a pretty damn good year. Just wasn't a great year and that's okay too.

Clearly, long-term goal setting often didn't work for Frank, and this quote reveals his thoughts on possible reasons for this experience. The long-term goals he mentions often were outcome goals that were not only based on his performance but the performance of other players on tour. It appears that there is common experience of getting caught up in outcome based goals and ultimately having them distract the participants from the daily practice they need to accomplish. Furthermore, Frank recognized the importance of acknowledging that he can play pretty well and still not win.

Most participants did not emphasize winning as their main focus, although they mentioned wanting to do so. Instead they focused on performance and process goals that were more within their control. Zach spoke about his experience with using long-term goals to help him focus on short-term more process-based goals:

Yeah I set a lot of goals at the beginning of every year long-term. I do some short-term goals as well, like low round for the year. Say my low round for the year at one point is a 67. I try to shoot 66, and by doing that I set out these daily goals—accomplishing putting drills and stuff to kind of help me work towards that. But I guess sometimes you're

caught up in the long-term goals as opposed to focusing on just what's in front of me and letting that bigger picture kind of take care of itself.

Zach thus describes his use of long-term and short-term goals as complementary. While he talks about setting a performance goal to shoot a low round for the year (i.e. 66). He also mentions setting up drills that are tailored to his long-term goal of shooting better scores. Each of these participants expressed a focus on performing well in tournaments and getting the lowest score possible, but the way in which they went about working towards those long term outcome based goals was to focus on the more short-term process oriented goals.

Two participants recognized that to improve they needed to focus on specific weaknesses of their game (e.g. putting). They spoke about statistical ways to go about assessing the current state of specific parts of their game. In the following excerpt, Andrew describes a concept he uses called "strokes gained." This is a statistic kept on the PGA-Tour that compares a particular player to the rest of the tournament field. For example if a player has a score of 0.0 strokes gained putting, he is right at the tour average. If he is -1.0 he averages one stroke better and 1.0 represents one stroke worse on the putting green. Strokes gained statistics are kept for all aspects of the game (e.g. driving, wedge game, iron play, etc.) Given the high performance standards of the PGA-Tour, it is often the case that improving your strokes gained statistic by .2 for an entire year is seen as a major improvement. Andrew discusses the evolution of his goal setting and how he now has started to use more statistics such as "strokes gained."

I went through quite a long phase where I was so meticulous that I would write down I basically had a weekly practice schedule that I would keep, like, 'I've gotta do these certain putting drills this many of them every week and these drills with my chipping and my wedges.' [I] basically planned out each week what I was going to do and so I would set [a] certain next week check list of stuff that I had to accomplish by the end of the week each week. I would follow that checklist and I called them practice goals, process goals, whatever you want to call them and I would get those done every week. Now I'm more focused on what I call performance goals, and so those are like statistics that I'm

trying to achieve when I'm out playing my tournaments. Whether it's something from a golf specific thing that it'd be hard to explain—I'm using mostly strokes gained statistics, which is a new kind of metric that the PGA tour is using to analyze players' performances. The old metrics were pretty simple things like hitting fairways, hitting greens in regulation, counting putts, and now we've got just more more accurate more better ways to measure a player's performance through statistics called strokes gained. Anyways so now I have certain bench marks that I'm trying to achieve with my statistics during my tournament play and I let those goals kind of guide my practice now. So it's not so much, 'I have to do this much of this every week' or 'this much of this,' it's I look to see how my actual performance is stacking up to the performance goals that I've set. If I've set the goal to have positive two-tenths of a stroke gained with my approach shots in tournament play and then I look at my stats and see that I've actually lost a full shot every round from my approach shots that kind of is my is my guide to tell me, 'hey let's go really work on iron play and see what's going on see why these measures aren't where we want them to be.' So that's now more how I'm using I'm using the performance goals to guide my practice rather than setting specific practice goals that just kind of rope me into doing the same things every week.

Goal setting, like other elements of practice, has evolved for Andrew. He makes the point that he used to set daily goals to accomplish in practice but after that experience he found that he was often doing the same drills over and over. The strokes gained statistics that he mentions and his quest to achieve a certain standard represents a performance goal that he hopes to accomplish during tournament play. It appears that he values tournament goals over daily goals so that he has the freedom to alter his daily practice. This may help him engage more in practice rather than simply going through the motions.

Similarly, Josh utilized tournament statistics in his process of goal setting to give him a big picture idea of the specific areas of the game that he needs to work on the most.

Goal setting is crucial in any job, I think, and it's obviously no different in golf. I mean if my goal is to be [a] top ten player in the world, I need to look at all my all my stats and skills and be like okay where am I not good? Where can I get better? So when I go practice I can work on my weaknesses. I mean, say right now my putting is probably not top ten in the world standard and so when I go out there to practice I can go look back at the stats and be like, 'okay well I'm the 100th best putter on the PGA-Tour.' I mean that's not good enough so I need to spend more time on putting. So when I when I go out there I have kind of my set thing which I do and it's helped me. So I think looking at stats and setting goals is very important when it comes to practice because you only have so much time to practice, only so much energy to give, so you need to not waste your time. If I'm

if I'm a top-ten chipper around the greens there's no point in me practicing three hours a day chipping because I'm already good at it so I need to spend time working on things which need more work.

Unlike Andrew, Josh did seem to enjoy having a “set thing” to help him perform better in a specific area of his game. While both participants use statistics to help influence their daily focus, Josh seems to have certain drills that have always worked in the past and so he chooses to use them. Part of this may be that Josh has had a longer career and achieved a higher world ranking than Andrew.

***Building confidence.*** According to Dr. Bob Rotella, “Golf is a game of confidence and competence” (Rotella, 2008). When confidence is low, engagement during practice may also deteriorate. For these elite players, maintaining engagement practice structure is centered on building confidence.

Josh: The number one goal in practice I guess I could tell you is to create confidence and you don't want to practice if you're always doing bad at something because... I mean, Golf is a game of confidence, so you need to find a way to get better at stuff so you become more confident. So if you're putting and you keep missing, well, go a little closer so you can keep making (laughs).

Zach: The reward is gaining confidence in knowing that you're prepared in order to compete at the highest level.

As illustrated in these quotes, the participants each affirmed the need to build confidence, again using a mixture of technical elements and strategic understanding in order to describe this aspect of practice. The specific elements of practice that build confidence differed amongst the participants. Zach, for example, recognizes that he gains confidence from seeing the outcomes that occur during golf practice. He elaborates on his experience with this below:

You know actually being able to see myself make putts, hit shots, that stuff is a little bit easier for me. I just seem to you know that's more tangible stuff that kinda directly for me gives me confidence.

Zach appears to gain confidence from task accomplishment. He speaks about his experience in doing putting drills consistently and the confidence he gains from doing a drill fast, thus being more competent, and slow, gaining a feeling of confidence through task accomplishment. Zach describes this experience below:

There's fundamental things that you have to do, set up wise, whatever to make certain putts. For me when I'm playing well and putting well these three or four drills only take me 25 minutes and then there's other weeks where I'm not putting as well and it may take me an hour/ hour and a half. I gain confidence from both. You know, doing it quickly knowing that I'm doing what I want to do and hitting my putts the way I want to hit them. I also gain confidence from on the longer days knowing that I've accomplished my goal and I've did drills that I know will help me out for the week.

**Visualization.** Most players report recognizing the importance of using visualization before hitting each shot. That is, these players will attempt to plan out a shot and "see" the shot happening perfectly before they actually step up to the ball and hit it. Andrew says this of his visualization process and why it is so important to him:

Visualization is something that you know for me it's it combines two sets. Obviously I'm using my eyes to sort of track to what I want a shot to do, like I'm picturing what I want the ball to do but also while I'm visualizing I'm feeling kinda what's going on in my body to create that shot. So yeah, that's something that, you know, I'm not always the best at doing it. Sometimes on shots...that during a tournament might cause a little tension or anxiety and, you know, it's harder to get a really good picture cause you kinda might spend a little more time thinking of the things you wanna be cautious against doing, and that is something that I'm really it's really important for me to not do that. To have a really clear picture of what I do want the ball to do, cause the more I can see the ball doing what I want it to do, the more my body can feel that. If I can have a clear picture and a clear feeling of what it will take to create that picture, then I can step up to the shot and I can swing with trust and confidence and just let it g. So yeah, visualization is really a key to my process.

Andrew recognizes that the visualization process entails more than merely seeing the shot executed perfectly, but rather attempting to feel the shot that is about to happen. This process has been widely recognized in sport psychology and golf psychology literature as being beneficial to performance. Perhaps the most recognized theory that has encouraged this process is Dr. SP's "See it. Feel it. Trust it." model that has been very popular among golfers of all levels (Vernacchia, Cook, and McGuire, 1996). As stated, the process here allows the golfer to efficiently tap in to sensory perceptions and memory storage while being able to then compartmentalize one's thoughts so that by the time the golfer is stepping over the ball, he or she has a clear and simple process that promotes consistency and confidence. In the following excerpt, Andrew specifically describes an example of visualization that he practices routinely on his local driving range:

There's one little spot on my driving range where I'm from. Off to the right side of the driving range there's this little dip in the range and there's this little narrow footbridge that goes over the dip... I will sit there and hit drivers at that little foot bridge and try to get it through because it's perfect distance for a driver for me. So I will try to hit drivers until I can get one to go in the foot bridge and I get so intense. I'm very intense with my alignment. I'm very intense visualizing the kind of shot I want to hit and so it really brings out something good in me when I try to [execute] you know an incredibly difficult task. It's a yard wide—it's three feet wide—so it's an incredibly difficult task and it brings out something really good in me. What I'd like to do is be able to have that same commitment to visualization and going through the process when I'm aiming at a flag down the middle of the driving range where it's wide open on both sides of it. I think you know that kind of attitude is something that can translate well into performing on the course. They're certainly tee shots that make you more uneasy than others but if you're so committed to just go through the same routine all the time I think that can only be helpful. So that's something that I'm working on right now is just trying to bring, you know, the same the same level of commitment to my process and the same kind of level of intensity, if you will, to everything I'm doing in practice and I think that will help me. That will help my practice transfer better to performance on the course and I also think it'll help me be a little bit more efficient with my practice. Rather than ever just going through the motions, I'll be you know pretty much achieving something with every shot that I hit if I can do that.

Andrew recognizes that if he selects a pretty challenging task (i.e. hitting across a bridge with his driver) it helps him engage at a level that is beneficial. Further, he recognizes that “it brings out something really good.” In addition to selecting challenging, somewhat unrealistic shots as a way to help facilitate engagement, visualization, and confidence in practice, these players report that selecting more realistic shots—the type that may be experienced in a tournament—is also beneficial. This type of practice requires a deliberate focus on each shot and some creativity to pull off. Frank describes it this way:

I would say just seeing shots just trying to picture shots I’m trying to hit and you’re pulling them off in practice. I would say, ‘okay, you got a left pin with a six-iron and I cannot hit it left of this green cause there’s [water].’ There’s no water there on the practice tee, but you say, ‘okay, if I hit it left of this green that’s in the water,’ and then try to pull the shot off. Try to hit shots that maybe are not easy and you’re not comfortable with. You’re on the range and you’re trying to pull these shots off, trying to make it work. So mentally you know getting in to your routine and trying to simulate what it’s like to be out there when you go to the golf course you know what shot you’ve gotta hit and you’re practicing on the range, trying to emulate those things and trying to do it. And not just once or twice. You gotta do it thirty times. Just mentally try to see the ball go, or see the shots you’re trying to hit to pull them off, and see them and feel them. All those things [are] what you’re trying to do, so when you get under the gun and you get to the tournament you can do this. ‘I can hit this shot. I got it.’ ‘I know what I’m doing,’ versus just getting up and wailing away. That’s what especially you see in college, see these kids just try to get it. Right, so, ‘I don’t know I’m gonna do it, but I’m gonna do it,’ versus knowing you’re going to do it. ‘I can hit this shot, I got it.’

Notably, Frank reveals that taking time to visualize is not necessarily natural to him. Similarly, Josh elaborates on his experience with visualization and describes the mental discipline required to engage in this process consistently:

I think it takes a lot of discipline. After a good practice I mean you want to be a little tired and, like, fatigued, and it’s extremely difficult to practice properly. I mean a lot of people [are] like, ‘I’m gonna go on the range and I’m not hitting it well,’ and they’ll just hit ball after ball after ball. It might become physically tiring cause you’re just hitting balls, but you’re not really gonna be mentally tired because you haven’t really thought about each shot. I mean, you get on the range and you just hit towards a target over and over, and then you get on the first hole. Say you’ve got the same club, well now you’re thinking about the wind and the slope of the green and where you can’t hit it, and if you

need to be just left of the hole and all these things you think about on the course you never think about when you practice. You're just hitting balls. So I think the trick is when you're on the range if you can get as close to how you would feel on the on the golf course as you do on the range, which is extremely difficult to do cause I mean you have to have a lot of imagination in your head to try and picture certain shots on the on the course. And a lot of ranges are just kind of big open spaces so it's difficult to do that, but if you can really kind of focus in and pretend you're on the course when you're on the range it's so much better for your game.

Josh discusses the urge that he and many other golfers face when practicing—that of shutting your brain off and just “hitting balls.” For him, he values a sort of simulation strategy when he is on the range where he visualizes certain shots he may have to hit on the course and he attempts to mentally go through the same process that he would under a real play scenario. In fact, Josh seems to go a step further during practice in an attempt to fully simulate the experience that would occur during a competitive round of golf: While he's on the practice tee, he takes small breaks that simulate the amount of time it would take between shots during an actual round of golf due to the time it takes to walk from shot to shot:

Josh: Even going through your routine, taking breaks between shots, trying to make it more like tournament golf. I mean, hit a shot, go take a sip of water, do something for a couple minutes and then go hit another ball cause that's what it's like on the golf course. Try to make your practice as realistic as possible.

Although visualization is key for Frank, Andrew, and Josh, not every golfer feels the same way.

Zach spoke about having difficulty with the visualization process:

For me the mental, the visualization, that type of stuff is harder for me because my mind is not as creative or whatever. Sometimes I have a hard time with visualization and that's not as fun for me

It is noteworthy that both Frank and Andrew spoke about being creative on the golf course while Zach spoke of having difficulty with the visualizations due to a perceived lack of creativity. As

in other aspects of practice, the participant's personality may play significant role in how they go about practice and what they value out of practice.

However, Zach did mention that he would use visualization in a different way.

I do some visualization. You know kind of visualizing myself on the golf course at the tournament being successful and putting myself in the pressure situations mentally and trying to handle those as best I can in my head before I go out there. Some of that rehearsal mentally it would, you know, some visualizations have helped me out.

As the quote indicates above, Zach engages visualizing tournament situations when he was home and it helps him when he goes out to compete.

***Simulation.*** When participants were able to create scenarios where the outcome mattered, pressure was simulated. The participants report strongly valuing the part of their practice that entails creating these pressure situations because it helps them feel more prepared for a tournament, where pressure is at its highest level.

Frank: When you play under pressure you gotta hit these shots and you know you have to. It's nice to have play games or play a chipping game with another pro or a putting game with another pro—not just for pride when you beat him. You're gonna have these chips out there when it matters and these putts out there when it matters. You know the more you can practice and simulate game situations then, I think, the better you're gonna do. I think it's important to put pressure on yourself like, 'Oh, okay, I really gotta chip this in,' and all of a sudden you're right there. You got a little tap in putt. Sometimes that really helps you when you get under the gun.

Josh: ...you have to add like a little bit of pressure cause that's what it's like on the course.

Often players will be practicing well and then get in a tournament situation and find themselves under more pressure than they are used to and their performance declines. To simulate tournament level pressure, these participants describe playing practice rounds with friends or do drills with friends and compete against them. They find a way to keep score and

play to win, as in a tournament. On the driving range this simulation may involve making a game that involves hitting a number of shots close to a target. Andrew describes one such pressure game this way:

I'll create a little like, you know, one, two, three point system. So for instance if I'm hitting a 100 yard shot I might say, you know, I get one point for landing it inside of 15 ft, two points for landing it inside of 10ft, three points for landing it inside of 5ft. I'll hit eight shots or ten shots and just sort of keep a little score in my head and that to me is like a fun way to do target practice, and I'll do that from all different distances.

Andrew thus describes a game-like strategy that helps him focus on each shot in an attempt to get the most out of every part of practice, as opposed to simply hitting random shots. When he is trying to beat a previous score or achieve a standard his level of focus may increase thus achieving a higher quality of practice.

Steve, meanwhile, describes a simpler approach that still aims to accomplish a pressure simulation. He recounts this experience in working with a driver on the range as follows:

Sometimes with the driver I'll try to try to at least make some fairways...you know, maybe between two trees or two flags, over this green or whatever. It might be just to keep your mind from allowing you to hit it all over the range without it mattering.

A common putting pressure drill involves making a certain amount of putts in a row or a certain percentage of putts. Andrew describes his version of this by saying:

I would do drills with... like a score goal in mind. You know putting drills where I'd measure out eight, six-foot puts going around a circle and I'd go around three times so I'd hit 24 six-foot putts and I'd try to see how many I could make and I'd sort of keep score and try to get better. Do better the next day than I'd done the day before.

Similar to the range game that Andrew created, this type of game gives the participant something to immediately work towards. While some of these simulation games are described as enjoyable

by these participants, they also detail pressure tactics which aren't necessarily as fun, but add value to practice. Josh describes a common putting drill he uses:

I work on really short putts and [I] gotta make ten putts in a row from three feet and umm if I miss I'll start again... you have to add like a little bit of pressure cause that's what it's like on the course if you're just hitting putt after putt on the range I mean no one cares if you miss if you have to make a certain amount then after you've made seven, eight putts I mean you don't want miss because then you have to start again. So it adds that pressure [and] competitiveness kind of like it is on the course.

Clearly, while the participants valued simulating pressure in practice, the data show that there is a certain point where pressure becomes too much for these players and can actually get in the way of productivity. Andrew describes a drill that he has altered over time to reduce the amount of pressure and ultimately the amount of self-deprecation that occurred as a result of having failed attempts at the original version of the drill:

I was a little hard on myself I guess with my practice because cause I had my weekly list of drills that I wanted to get done and I'd really like beat myself up if I didn't get them done. I'd be out there on Sunday afternoon like really grinding over some putting drills cause like when I wrote down, 'Get this done this week.' I would do like my putting drill when I would do 24 six-footers and to get the drill done I had to make eighteen out of twenty-four which you know 75% from six feet would either lead the tour or be really close. So that was pretty hard, pretty high standard but you know I'd for instance I'd maybe written down that I had to get that drill done you know twice in a week. If I'd come to a Sunday afternoon and I only had it done once like I might spend two hours on the putting green trying to get that done that one last time and I'd sorta beat myself up over it if I didn't. So I don't really think that was like the most healthy way to practice with the kinda like you have to do this or else I'm gonna, you know, feel crummy.

Ultimately, Andrew recognized that the pressure element of the drill was good for his preparations, but he also recognized that he would "feel crummy" if he didn't accomplish the drill. Over time, he was able to alter the drill slightly so that he could still keep the pressure element there while also avoiding the self denigration that would cause him to be "hard on himself."

I still do it but now I do it more in just like a like a keeping score like see how many I do this week you know this week. Well I made 16 out of 24 this week. Okay I'm gonna do it again. I'll do it again next week or I'll do it again later this week and I'm gonna try to get better than 16. This time it's not a deal where it's like well I didn't get 18 out of 24 so I fail. I have to do it or else. That's kind of more the approach I take now. I think that's much more healthy.

As mentioned in the excerpts above, Andrew altered a practice drill to alleviate some of the pressure and ultimately the implications of failing. However, some of these participants alluded to the fact that pressure is part of golf because it is such an individual game; players have no teammates to blame. Zach describes the downside to this individualized pressure this way:

Golf such an individual game and you have all these goals that you set... become better and win tournaments, or you know where you'd like to be in one or two years. It's easier to get caught up in in that in an individual game putting pressure on yourself. I put pressure on myself probably a little too much. I kind of get in to the habit of thinking a lot about things that are out of my control from a bigger picture I suppose to centering in on what I can do right now. That's something that I'll work on and continue to work on.

***Energy management and peaking.*** The participants in this study referenced tour schedules as an issue affecting practice. For them, tour play often necessitates going on the road for several weeks at a time and competing in a tournament every week. Tournaments will last four days (Thursday-Sunday), if a player makes the cut after the Thursday and Friday round. Making the cut means finishing in roughly the top half of the tournament field after the first two days of competition. In addition to playing in the tournament, PGA players may show up to the competition golf course as early as Monday to play a practice round and sometimes a Pro-Am event. Needless to say, tournament weeks can easily entail six or more full days of work.

Given the effortful and demanding nature of practice, as shown in the data, these participants reported that energy management was important in order to stay engaged during practice. Managing one's energy and motivation was not only essential, but took on a different

forms depending upon the participant. Taking time off was challenging for these high achieving individuals, but each player recognized the importance of it. Here, Josh describes his experience in taking time off after several weeks on the road:

There's been stretches... say you played three or four weeks, five weeks in a row traveling around with flying and [now you] get to go home for a week. You don't want to practice I mean you're body is tired... I really I kind of struggle with that, when I am at home, of getting the motivation to practice after a long trip. I mean, it is very tiring and taxing on your body and your mind, so when you do go home sometimes it's nice just to relax and get away from it. But at the same time, then you're always questioning like, 'Oh maybe I should be out practicing and trying to get better.' There's such a fine line between trying to get better and not overdoing it. Sometimes you just have to trust your ability and relax your mind and realize that it's like riding a bike. You're not going to forget how to do it you just have to allow yourself time to relax and to kind of get away from golf as well. Kind of what I said earlier about growing up with no range and then taking time off in the wintertime so I've always been one that's been able to take breaks. I trust myself and I realize I'm not gonna lose it.

It appears that success and past experience may determine these players' attitudes about taking breaks throughout a season. In the previous excerpt, Josh says that he has always integrated breaks during the "wintertime" throughout his life. It seems to be very natural for him to rest during that time and he feels comfortable doing so. Additionally, as detailed earlier, Josh has achieved a higher level of success than some of the other participants and may feel more comfortable taking time off because he believes that his game will come back.

Alternatively, Steve recognized that for him he needed to take some time off after a long stretch of poor play as a way to reset.

Probably a couple times my rookie year I wasn't playing very well and I didn't make a cut for two months. I was on the road a lot because I had to play. I hadn't played well enough to take any weeks off so it was kind of a double-edged sword I guess. I needed to play but I wasn't playing well and it was almost more aggravating than anything. So it was kind of a you know I'm not dying to practice but I have to practice. It was a little agitating. Sometimes when I'm been on the road for four or five weeks I'll just leave the clubs for a few days and try to start when my brain is fresh.

Steve reports that he has learned over time that mental fatigue and frustration on the golf course can lead to more frustration and poor performance. He states:

I've found when your fuse gets a little short on the golf course it's probably time to go home for a week and get yourself reset.

Almost without exception, the participants recognize that rest is important, but they report not sitting idly for long, and they express strong desires to keep working after just a short break. It didn't take much for these participants to recharge and regain a strong motivation and desire to get back to practice.

Andrew: In 2016 my results have been pretty much disappointing in a lot of ways I mean I'm... it hasn't been a good year. So when I played my last event a couple weeks ago for the year I felt, you know, excited to have a little break, just kind of relax and maybe get away from golf for just a little bit and all that and I did. I came home. We were in Sea Island, Georgia for the last week of the year playing a tournament, and I came home you know didn't play golf for two or three days and by [the] fourth day I was like, 'Man, I'm ready to go. I'm hungry to go get out there.'

Steve: you need breaks here and there but, if I sit around for a minute too long especially on a nice day it kinda drives me nuts. I just want to go outside.

Beyond taking time off from all golf related activities, these players also discussed the decision to take a break from competitive tournament golf, as such a break can impact the quality of practice. This can be a decision in a player's control—when they have the luxury to not play every week and still earn enough points to maintain their tour card—or one out of the player's control. With the latter, if a player fails to finish in the top 125 on the money list for the previous year, he can potentially lose his card or be granted conditional status. This can lead to a player being forced to take more time off of competition. Steve states his experience with this kind of “forced” break this way:

I didn't play well, missed my card by one spot. Then was playing out a conditional category the next year so I was trying to it kind of made me take a rest which was good umm and you didn't play as often so I got to work on stuff at home and then umm you basically had to trust what you had when you showed up cause you needed to play well. Luckily I played well.

It appears that Steve valued more time at home to specifically work on his game without the added time commitment required for traveling and competing on a weekly basis. The phenomenon of taking time off has characterized the game's elite since Jack Nicklaus. He was one of the first golfers to play fewer events in a year so that he could focus on the major events. Professional golf has four events each year that are held in the highest regard: The Masters, U.S. Open, British Open, and the PGA Championship. These events are referred to as "the majors." If a player has had some success on tour and is not in jeopardy of losing his tour card, he may take a few weeks off prior to each major in an attempt to peak his game towards that specific event. Josh describes maximizing peak performance this way:

I mean you're trying to peak at certain times. Yes it's great to be able to play good any week on the PGA-Tour. If you manage to win it's an amazing feeling. But when you're in the kind of top fifty in the world and you're playing in the majors and the world golf championship events. Big events. Like if I won this week it would be amazing but if I won the Masters it would be one-hundred times more amazing. So you're kind of gearing your practice up towards trying to peak at certain times. I mean lead up towards the Masters I might practice a little bit more than normal. It's tough to sit out because I mean every week is so important but like I said I mean if you win the Masters or the U.S. Open or British Open, PGA I mean you're then you're down in history so you're maybe gonna practice just a little harder, a little more, a little more kind of effectively for lead up towards those tournaments just because they mean so much.

In addition to spending more time and energy focusing on the majors, these players described slightly altering or improving specific elements of their game so that they can adapt a style that will fit the golf course that is holding the major tournament. If a player is playing almost every week, it is more difficult to adopt a new style of play because there is not enough

time to work on the specific changes while also attempting to compete on a given week. Josh describes his preparation for the Masters and mentions some specific tweaks to his game that he deliberately made in order to help him play the course, Augusta National, more effectively.

I went up and played Augusta a couple weeks ago so in the back of my mind I might be thinking okay well I need to hit a certain shot. Say for example at Augusta you need to hit some draws off the tee with your driver. So I mean I might be thinking about that already like subconsciously so I mean even this week in Tampa I might just try and hit more draws off the tee.

During the time of the interview, the Masters was a couple of weeks away, so Josh started working towards that particular tournament almost a month before it actually happened. He mentioned that he may “hit more draws off the tee.” In this instance, since Josh is a right-handed golfer, he attempts to curve the ball (slightly) from right-to-left. This allows him to hit a shot that may come to rest in a more advantageous position. If a golfer is used to hitting the ball straight or even fading it (curving from left to right), it may take some work to consistently be able to draw it. This strategy and technique, as described by Josh, reveals how these elite players will sharply focus on specific elements of the game in order to provide themselves with a competitive advantage over a player who simply approaches every course with the same game.

Beyond during the general preparation leading up to a tournament, these players expressed how energy management was also important during a tournament week. To Steve, conserving energy during such weeks was described as very beneficial. He details his evolution of practice during a tournament thus:

As you get a little older you know maybe don't have that much energy. I'm not old yet but umm you know you've been to some of the places a few times. Not everything is new. [I] kinda found I started at the Pro-Ams a little bit last year because I wanted to make sure I saw the course somewhat Monday and Tuesday in case we got bad whether Wednesday... So I was I think maybe playing a little too much Monday, Tuesday, Wednesday and wearing myself out a little bit. So I'm kind of trying to adjust... If you don't get in the pro-am on Wednesday you can play Monday, Tuesday, Wednesday you know you can practice for a couple hours and you're done so you kind of get a I don't

know you kind of get a rest day in the middle of the week when you don't have a pro am so it was a little bit of a little bit of a change for me.

## **Being Proactive**

Andrew: When I turned pro it's a whole different kind of pressure. Knowing that when you're out practicing if you're practicing if you're not getting what you need out of the practice, and by that I mean if you're not increasing your performance having your performance be better in tournaments you don't get paid...

This statement reflects perhaps the most obvious challenge that these participants had to overcome: the constant pressure of making it on the PGA Tour. As Andrew states, if you don't perform, "you don't get paid." Needless to say, Andrew and the other participants have strong extrinsic motivations to play well and to practice well. While this challenge exists for all the participants, it was rarely emphasized even when probed by the interviewer. Instead, the participants expressed their focus on things they could control. Further, what clearly emerges from the data is the participants' strong inner confidence that they could solve any problem relating to their performance on the golf course. When asked to respond to challenging times where his motivation may have been lacking, Frank responded this way:

To be honest with you, there [weren't] many times where I felt that I just wanted to not work at it. There are a few times that I was playing so bad that, you know, I'd take a few days off here or there. But in my brain it was always the frontal lobe of, you know, 'I don't know how I'm gonna do this,' how I was gonna turn this around. But there wasn't a time where I'm not looking at it in some form or fashion. I just never had any quitting [in me]...I just always had that innate ability to, 'I gotta get this job done...' When things are bad or things are going bad I just didn't have that quit in me. I knew I had to work at it. I didn't have the time and energy. I just did it.

In essence, Frank responds that he doesn't feel—or allow himself to feel—a lack of motivation related to challenges, and implies it as a factor in the success of his long tenure on the PGA Tour.

The data show that when he and the other participants did speak of challenges or obstacles relating to practice, what they expressed had to do more with the actions they were taking to move forward with their games. Their words sounded optimistic and often didn't even acknowledge them as challenges. What emerges from these responses are three sub-themes related to being proactive: *navigating time constraints, making practice more efficient, and working through poor performances*. The following represent the challenges that the participants faced and their experience in working through them in an attempt to maximize their efforts towards practice.

***Navigating time constraints.*** These participants say that as they reached the PGA Tour and achieved success for the first time, many distractions that they were unfamiliar with became part of their day-to-day experience. Over time, these players say they learned how to manage their time and energies so that they could still practice effectively. Frank reflects on the beginning part of his career when he first won a tournament and what that experience was like for him:

Yeah there's plenty of distractions. The better you play the more distractions there are, and that's stuff that you have to deal with, especially, you know, early in my career, my first three years, three and a half years. I hadn't won, and I got better every year. Then my fourth year I won back to back tournaments leading up to the U.S. Open at Hazeltine and my life changed. Totally changed. My routine totally changed. I had to make sure that I gave myself ample time for practicing....It's easy to lose that especially if you haven't done it before. You're getting torn in twenty different directions from your agent to your wife to your people that want a piece of you. You have to really be a dedicated athlete a dedicated golfer here to eliminate a lot of those distractions.

It appears that time became a valuable resource for Frank and he recognized that in order to fully prepare he had to make sure he prioritized practice. Sometimes this meant telling people

no. Frank elaborates on overcoming this obstacle and what he ultimately had to do to ensure that he had “ample time for practicing.”

That’s something that’s just part of life.... You have to be able to be mature enough to say no to people, and no, not right now I’m busy, I’m working on my game and [that’s] something that’s hard. It’s easy for some guys to do and it’s harder for others. In my career it was tough for me. I wanted to help as much as I could... you have to have that discipline and that maturity to not let outside factors mess with your preparation.

Josh had a similar view on outside distractions and further emphasizes how increased performance and world ranking lead to more distractions:

Managing your time is difficult. I mean you travel a lot. You have a lot of people kind of wanting your time, so...maximizing your time to practice and train and play, that’s a tough part of professional golf, which a lot of people don’t realize. I mean, myself compared to like [the] top five players in the world is [an] enormous difference. I mean the very top guys...it’s tough for them to manage their time because they have to do all the interviews and media stuff. It must be challenging for them and that’s why when they practice they can’t waste their time. They need to be very efficient.

Some participants mentioned that starting a family impacted their practice routines and forced them alter their practice habits and learn how to balance their practice with other important aspects of their life. Josh and Steve spoke about family and its impact on their practice.

Josh: I think I practice less now than I used to because I want to maximize my time when I do practice. Also I travel much more now. I’m at home less, so when I do go home I want to spend time with my wife and my family more than just being on the golf course everyday. I mean when I just [went] out in college my number one goal was to get to the PGA Tour and I mean I was out there practicing and playing everyday. Now, obviously, it’s just as important to me, but yeah I mean I have other things in my life now as well. It’s a balance. I mean, I’m married so once you have a wife she complains if you go golfing everyday (laughs).

Steve: Got a family now so the I spend a little more time trying to condense my practice and go out a shorter amount of time instead of hanging out all day at the golf course which it’s a little different for me.

While some distractions existed off the course for these golfers, others were present during practice. Specifically, during any given tournament practice day (Monday-Wednesday) participants noted that they may be approached by golf equipment companies and asked to try out their equipment. As mentioned earlier, these participants recount how PGA Tour players are often testing different equipment to find the ideal clubs that maximize performance. However, they describe that this ideally and usually happens in the weeks leading up to a tournament, not during a tournament week. Here, Andrew describes his experience in working through said distractions during a tournament week.

My rookie year on tour I was so distracted by everything. I was distracted by the equipment companies that had all their new products out there trying to push them on us on the range and get you know cause they're trying to get their new shaft or grip or club in play on tour so they're trying to get anyone. I think they know that rookies are the most vulnerable to that. So I mean they're out there harassing (laughs). That's not the right word, but there's just a lot of holds on time and attention. For me that's a big challenge because I need my time and attention to be on my practice when I'm practicing. So it's been, I guess, it's been really cool now to see the challenges from my practice have evolved into something. That's a really good problem to have when you're being stretched by, you know, crowds of people watching and equipment companies trying to give you stuff. Those are good problems to have, so it's been cool to see the evolution of that.

It seems that in spite of the distractions Andrew faced during his practice, he remained positive about the situation and recognized the big picture. Ultimately, having these “problems” means that he is competing at the highest levels and he appears to be embracing it as part of the job.

***Making practice efficient.*** All of these participants recognized that practice time was incredibly valuable but not always plentiful. To overcome this obstacle, participants learned how to become more efficient with their practice. While being more efficient allows these participants to condense practice and leave more time to deal with external demands it also, more

importantly, they say, leads to better results. The following speak to the specific nature of this practice experience. Josh spoke vividly about this process.

I'm a big believer in making your practice be efficient rather than too time consuming. Like hitting ball after ball after ball and not concentrating is less rewarding than really trying to focus. You can you can get a better practice in thirty minutes to an hour if you're focused rather than two hours [or] three hours if you're just hitting ball after ball. We call it scrape and hit. You're just scraping the ball and hitting it so you're not really concentrating. So quality rather than quantity practice is, for me, is much more rewarding.

Here, Josh mentions a very common tendency in golf when he describes “scraping the ball and hitting.” Throughout the data, these participants expressed both this tendency and the need to overcome it. As they describe it, to get more out of each shot during practice, a high level of focus and effort was required to avoid the obstacle of automaticity. Andrew, Steve, and Zach express their experience and thoughts on avoiding automaticity on the driving range in their attempt to make practice more efficient.

Andrew: It's not that I necessarily require that I have to put in you know six, seven, eight, nine, ten hour days. What I do require is, you know, full effort and full focus for my practice. I see a lot of guys and this was this was kind of my beef with my college teammates and I still see it even among the best players in the world on the PGA Tour. A lot of guys who are very able to kind of laugh their way through a little practice session and stop and talk to every you know everyone that walks by and whatnot. That was one of the lessons I had to learn in my rookie year on tour when I wasn't successful at all. When I'm gonna practice, I need to go find you know a corner of the range where people aren't gonna be walking by me a lot and have some pretty full focused [practice]. That's important for me. So for me to have good practice takes, you know, a decent amount of time—alot of effort. Not in a bad way, like I'm out there wearing myself out, but a lot of effort and very intentional focus.

Steve: It takes, in my opinion, if you do it right it's kinda like my swing coach says. It's not necessarily the amount of hours you put in but the good practice you get out of it. I mean, you can probably achieve a lot in a couple of hours if you really put your mind to it, if you try to go through all your processes. Or you can sit out there for three or four hours and then you shoot the bull with some people kinda in between what you are doing. You can get a lot out of a couple hours if you're really after it, or you can you can get a whole days' work in maybe half a day if you feel like it. Eventually, you're beating balls

you get tired. So you don't want to overdo it. You wanna make sure you're getting everything out of it you can without wearing yourself out.

Zach: I guess it's also about quality versus quantity factors. A lot of people want to practice for eight hours, but they're only productive for two of those eight hours. I think a lot of that has to do with being mentally sharp when you're practicing. You can get a lot out of an hour if you're completely focused on what you're doing. No distractions. You know you're not taking time to go talk to somebody else or whatever...It's about maximizing that time that you set aside [and] not let anything else get in your way.

Andrew, Zach, and Steve all recognize the importance of solitary practice and getting away from some of the casual conversations that can often take place on a driving range. This was an important step these participants made in an effort to make practice more efficient.

Additionally, during effective practice the participants were not "wearing themselves out" but were still putting forth a significant amount of effort. The phrases "mentally sharp" and "quality over quantity" were used to describe the experience during practice. While practice time differed among participants, it is clear that there was a preference for a quality over quantity approach to practice.

Practice rounds, as described by these players, are viewed as important but are often the most time consuming part of practice. Steve recognized that to be more efficient he had to spend less time playing and more time on the practice tee.

You know maybe you don't have all day so you can't go play 18 holes with your buddies and then practice for a couple hours on one end or the other. So it might be, get three hours of practice in, maybe play a quick nine if you can, and go home or take care of whatever you have to do. So you maybe do a little more practice and a little less play, just because of the time consumption, but I still like to play a lot when I can.

Similarly, Andrew spoke about practicing more over playing practice rounds:

In college all I really wanted to do is in practice was play, and very late in my college career—like my senior year—I started to realize that I could create, you know, situations that felt like playing because I would keep a little score in my practice, like with...some of the putting drills that I would do and then...some little wedge things like I was just describing with the bull's-eye. I could keep score while practicing and that way...it's

more efficient in a way. It's more efficient to practice than it is to play because when you're playing you know hit the shot and then you walk a couple hundred yards and then you hit another shot and walk a couple hundred yards. Whereas practice you can sit there and just hit and hit and hit. So like that was like the first evolution for me was like, 'You don't have to play all the time.' You can get more done if you practice. You just have to find ways to still create...a situation where the results do matter a little bit.

Andrew recognized that he could spend more time working on his swing when he was hitting balls as compared to playing a practice round. As indicated earlier, Andrew still values simulating pressure or using a game-like situation "where the results do matter" during practice to help him focus.

***Working through poor performances.*** In addition to managing time demands, another challenge these participants faced was practicing effectively after several poor performances.

Zach compares his motivation regarding practice after both good results and bad results.

I mean, I've not yet had as much success as I'd like to have at the highest level. There's certain times where I kind of feel like I need to go practice, and obviously should be practicing, but I'm not quite all there mentally and I end up going through the motions more or less. That's kinda probably more when I'm not playing my best. When I'm having like a rough month or something. When playing well or, you know, a good two or three weeks, it's a lot easier to kinda get motivated and to kinda, you know, visualize situations. Except...pressure situations, you kinda get your juices flowing a little bit more the more practice you get. For me personally it's been more of a challenge to kind of get up and get motivated to practice going through tougher times, but there have been certain times where I've been playing poorly where obviously you have to work through those in order to get the successes.

This was a common experience for the participants. They would often be more motivated to practice after good performances to try and capitalize on their current success. In a similar manner, Steve reflects on his experience after poor performances:

Probably a couple times my rookie year I wasn't playing very well and just I didn't make a cut for two months. I was on the road a lot because I had to play. I hadn't played well

enough to take any weeks off so it was kind of a double edged sword I guess. I needed to play, but I wasn't playing well, and it was...almost more aggravating than anything. So it was kind of a, you know, I'm not dying to practice but I have to practice....It was a little agitating.

While Zach and Steve have not yet achieved a lot of success on the PGA-Tour, Frank has enjoyed a long and successful career on the PGA-Tour. He reflects on his ups and downs and the mentality that he adopted to work through the negative results:

Well you gotta understand, you know, this is what you do for living and you're gonna have more bad than good. You gotta look at statistics. I mean my attitude always was that I'm gonna have over the course of the year, I'm gonna have two months of really great golf and the rest of the time I'm gonna figure out you know how to get the ball in the hole. You're gonna go through your ups and your downs. I think in my career one of the things that that made me have a long career and a successful one was I didn't let the hole get dug too deep where you know you spiral in this hole and all of a sudden you can't breathe. You can't get out of it cause of shitty bad play and you get negative then you get down on yourself. I never let that hole get too deep. You know I had some stretches of some lousy play, stretches where, you know, I had no idea where the ball was going, but I'm a professional. This is what I do for living. The next week might be my week, and that's the attitude that you have to have if you want to be a great player. Yeah I've sucked this week, but next week I can win and you can. It's happened. You look at guys that have missed seven cuts in a row and then they win. In 2000 I was a hundred I think I was a hundred and eighty something on the money list going in to Las Vegas and I remember playing a practice round [when] I ran in to PG10. He said, 'How you doing?' I said, 'You know I'm really struggling.' I said, 'First time in my career that I had to submit my application to Q-school. I'm gonna lose my card.' There [were] only handful of tournaments left and I won that week. I won that week I went from 187 on the money list to like 40. It was a five day tournament, so I shot 28 under par and I beat PG11 by one and I mean how did that happen? I was having the worst year of my career and out of nowhere I win. You know, how does that happen? What happens is you know you just gotta keep at it, keep playing, keep your spirits up and all those things are really hard to do when you're playing lousy, but you know there's no other alternative. This is my job and I don't want to lose it. I kept my card for 20 years I never lost for I think 20 or 21 years and in doing that I'm not gonna lose my job to somebody else. Every year somebody's trying to take my job away and when things are going good you ride it out. You just gotta, you know, dig deep and not let that hole get dug too deep. You gotta bounce out of it. How do you do that? Try and keep a good attitude, understand that things are gonna get better and not get too down on yourself. My attitude has always been every year that I'm gonna have a stretch where I play great and I'm gonna catch some more breaks and then you're gonna have luck. The rest of the year you just gotta grind it out and you may play well one week and play shitty for two months but you gotta just keep at it because this is what I do for living. I don't play piano. I don't have another vocation. I'm a professional Golfer on the PGA Tour and I don't want to lose my job.

Frank recognizes that the majority of the time he will not be playing his best and he simply needs to stay positive and “grind it out.” If Frank had been interviewed right before his big win in Las Vegas, perhaps his answer may have been a little less confident. He has had the results to back up his beliefs. While it appears that Zach and Steve are attempting to share the same philosophy, it is also evident that they have not gotten the results that would solidify this belief like Frank has had.

Josh has achieved a lot of success in his career thus far and his reflections on practicing after a poor performance indicate a somewhat different experience than the other participants mentioned.

I mean even last night...I had played poorly last week, so I mean last night I'm kind of up. I wasn't able to sleep that well, and I'm thinking about what I'm gonna do today to try and make myself better for this week.

## CHAPTER 5: DISCUSSION

The purpose of this phenomenological study was to examine the lived experience of five PGA-Tour professionals as they practice. Specifically, this study sought to explore how elite golfers think about, structure, and react to practice intended to maximize performance throughout a long career. While some qualitative research has investigated the developmental nature of elite golf performance, no qualitative literature exists on the experience of practice among PGA Tour professionals.

Consistent with phenomenological research, the study aimed to describe the “essence” of the PGA-Tour player’s lived experience with practice (Creswell, 2013). Additionally, the study attempted to explore the “what” while avoiding the “why,” thus avoiding generalization and emphasizing vivid first person accounts of human experience (Valle, King, & Halling, 1989; Dale, 1996; Wertz, 2011). Analysis of these experiences was then used to more closely understand the strategies that were found to be most beneficial to the participants in practicing effectively throughout a long career. The three primary research questions for this phenomenological study are:

1. What practice strategies (motivational) and methods (technical) do elite golfers perceive to be most effective to improve performance and when they engage in this training, what are their experiences?
2. What are the challenges that elite golfers face in their training and how do they report their experience in overcoming these challenges?
3. To what extent do elite golfers report variation in their training methods and how does the perception of variation impact their experience?

Although this research is influenced by a multitude of theories based in the development of expertise, motivation, and sport psychology (see literature review), the initial analysis of the participant's experience was not interpreted through a theoretical lens. As in other phenomenological research, each participant's experience and individual world "did not exist apart from each other" and thus these professionals were the experts of their own experience (Dale, 1996, p. 309).

In accordance with later trends in phenomenology, the researcher brought relevant knowledge relating to golf culture and practice strategies to the interpretation of the data to better explicate subtle nuances that may not be obvious to others (Polio et. al., 1997). However if left unchecked this knowledge has the potential to be biased. In order to prevent this, a research team provided accuracy checks throughout the research process.

### **Summary of Findings**

After the participants reflected on their practice experience thus far and the essence of their experience was explored, four central themes emerged: a) tailoring practice, b) staying engaged, c) achieving balance, and d) being proactive. These themes and the subthemes within each emerged across questions, representing the athletes' experience with overarching strategies used to aid performance. Research question three refers to the term "variation" in practice. The results were significant; however, this type of practice was another strategy that accompanied quality practice and will be referred to as such.

**Tailoring practice.** By definition, golf is an individual sport. The participants in this study, without exception, first and foremost described their experiences with practice in

individual terms and, as evidenced by the data, each participant in this study individualized his approach to practice. Andrew, for example, provided detailed daily descriptions of practice that were broken down by the hour. Josh and Frank, on the other hand, had a less structured approach and it seemed apparent that they spent more time playing practice rounds compared to Andrew. Both Frank and Zach spoke about incorporating exercise as part of their daily routine while the other participants did not mention exercise. Thus, the first overarching theme to emerge was the individual tailoring of practice. Further analysis of the data revealed that the tailoring of practice contains two key subthemes, namely, *knowing yourself* and *being selective with advice*.

***Knowing yourself.*** The individualized nature of golf requires autonomy. As one participant noted, practice in golf—unlike professional team sports—is not mandated and one’s job security is not dependent upon making practice. The comments of these participants rested in the reality that the how when, where, and what an elite golfer practices is entirely up to that golfer. Josh spoke about difference in the amount of time elite players practice stating that some practice, “ten hours a day,” while he practices much less than that. He said that if he practiced that amount of time he would “probably want to quit.” Ultimately, the participants emphasized that in order to practice effectively it is important to know themselves.

Additionally, players recognized that their weaknesses were always changing and they needed to individualize practice in a way that helped them maximize their time. They would assess their game on a daily basis and would alter practice slightly so that they could improve. While the participants had experts who assist them (e.g. swing coaches, caddies), they recognized that the primary responsibility for decisions concerning practice structure rested on their shoulders.

***Being selective with advice.*** While the participant was ultimately in control of all things relating to practice, they did selectively take advice from others. Rather than simply copy other players, the data indicate that the participants would learn from being around other great players and would integrate strategies into their own practice as they saw fit. Frank refers to this process as being in “a vacuum of greatness.” Zach mentioned that he would learn new practice techniques from his friends on the PGA Tour on ways to practice and he would make his “own version” of that particular practice drill.

***Achieving balance.*** The data indicate that achieving balance is crucial to professional golfers order to be successful during practice. Specifically, the data show that the participants strive to achieve balance across the following domains a) *technical/ strategic*, b) *maintenance/improvement*, c) *work/life*

***Technical/strategic.*** It is difficult to separate technical and strategic elements of practice in these data, because often the participants refer to the technical (e.g. drills, swing mechanics) in conjunction with the psychological experience and benefits to doing that type of practice (e.g. confidence). However, the data indicate that both technique and strategy are necessary during practice and the degree to which each is utilized is important depending upon the specific needs of the participant in that moment. Andrew spoke about of doing “masked” practice or technical work in order to achieve a proficient standard of shot quality, but said he recognizes that he needs to create drills where “the results matter” so that he could prepare himself for tournament golf where the results have big implications to his future on the PGA-Tour. He mentioned utilizing more “massed” practice when he first reached the PGA Tour than he was accustomed to

as a college golfer. Andrew admitted that “massed” practice was not his favorite part of practice, but says he feels it is necessary to improve.

Zach mentioned doing some “prep” work on the putting green where he “grooves” his stroke and practices easier putts. Once he feels “comfortable” he switches to more challenging putts that break left to right or right to left. During the latter drill he sets a goal of making a set number of putts. He recognized that the “prep” work during the beginning of his practice is necessary so that he will not waste time when he moves to the more challenging part of practice. He wants his technique to be proficient so that when he moves to the difficult putts he can focus primarily on the strategic elements of the putt (i.e. the break and speed) rather than the quality of his putting stroke. Similarly, Steve mentioned that he is currently working on his alignment so that he can feel more “comfortable” while putting.

Frank was a strong advocate for playing practice rounds and hitting different shots during short game practice and on the range. However, he also said he recognizes that he needs to work on some technical elements of his game when he was playing poorly. He often said throughout the interview that “the ball doesn’t lie.” Meaning, he recognizes, based on where he hits the ball, what technical things might be going wrong. He recognizes that sometimes his “ball position” or “alignment” is off so he needs to spend time on the range and hit “buckets” of range balls to work on his technique.

Josh also described a balance of technique and strategy when working on the putting green. He referred to a device called “The Perfect Putter” that helps him train his eye to “read the putts better.” After working with that he mentioned switches to more strategic drills that involve working on his speed as well as making ten short putts in a row.

***Maintenance/improvement.*** The analysis of the data also revealed these players, in practice, seek to find their appropriate individual balance between maintenance of skill versus improvement. The participants recognize that certain elements of their game require maintenance because they were already performing that element at a high level while other elements require improvement. This experience, as described by these athletes, impacts practice style and overall practice philosophy. For example, Josh mentioned that he wanted to “peak” for certain events like the Masters. For him, he would choose to work a little harder a little more for those weeks and push himself to get more out of practice. Other players recognized that the balance between maintenance and improvement was something that factored in to their daily practice. For example, Steve mentioned that he has been struggling with his “wedges,” and spoke of “always having to work on those.” He then expands upon this practice strategy, adding that if other clubs also “need more attention” he will sometimes spend double the amount of time on those clubs as his other clubs that are currently performing at a higher standard. Thus he underscores the need for balance between maintenance and improvement.

Zach discloses that he would sometimes neglect certain elements of his game when he is playing well and recognized that the neglected part of his game would often “come out as a weakness” and he would need to put more time towards that skill.

Andrew explained that by looking at statistics, he could find out the part of his game that needed the most work and that would then guide his practice. He describes how he looks at the “strokes gained” statistic and by doing this he recognizes when certain elements of his game are going well and when others are struggling. Andrew, being a younger player on the PGA-Tour and not yet having the success that he desires, spoke primarily about improving, while the older,

more established participants spoke more about incorporating maintenance elements in their practice.

**Work/life.** As the participants got older and became more successful, they often tried to condense their practice so that they could spend more time with family. For example, Josh spoke about being on the road more often and wanting to spend more time with his wife and family when he was home. In order to achieve balance he learned how to “maximize” his time when he practiced and become more efficient.

Similarly, Steve spoke about reducing his practice to a half-day so that he could go home early and be with his family. Specifically, he would forgo a practice round, which would take roughly four hours, and instead would just go to the driving range and putting green. This would allow him to leave the course in the mid-afternoon as opposed to the evening.

Another factor impacting work/life balance, as identified by these elite athletes, is the increasing professional demands on a player’s time as his success increases. Frank explained that as he grew more successful, he had more people wanting his time and it often made it difficult to get adequate time to practice. Ultimately he had to tell people “no” which was hard for him. He recognized that in order to continue to be successful on the PGA-Tour he had to maintain a steady practice regimen and sometimes be “selfish” about his game.

**Staying engaged.** As indicated in the introduction, the potential career length of a professional golfer exceeds the career length of other professional sports by nearly two decades. To continue to practice effectively for an entire career requires a strategic approach to practice that helps the player engage as much as possible. In Josh’s interview, this emerged as both a

strategy to help improve practice, while also being a strategy to overcome the challenge of becoming bored. The data indicate that the participants utilized the following strategies to help them stay engaged throughout their careers: a) *visualization*, c) *goal setting*, d) *building confidence* e) *pressure practice*, f) *variation*, g) *energy management and peaking*.

***Visualization.*** To these players, visualization was a strategy used during practice to engage on each individual shot. The participants recognized that during a tournament, they often use visualization when they perform. However, they also mention that when practicing sometimes during the routine and easier parts of practice they have a tendency to lose focus. Frank commented on this phenomenon by saying, “you kind of fall asleep a little bit, you take it for granted.” Similarly, Steve mentioned that he sometimes gets “a little lackadaisical” with the easier parts of practice. In order to effectively practice these fundamental, but easier shots, some participants recognized the need to use visualization before the shot. This process entails seeing the shot and feeling the shot before the participant actually attempts to hit it. While the participants see the benefit of using visualization to help them engage during practice, the data also indicate that consistently visualizing each shot can be mentally taxing and as Josh states, it “takes a lot of discipline.”

***Goal setting.*** Goal setting helped the participants stay engaged and on task throughout individual practice sessions, but also throughout the course of a year. Both Andrew and Josh spoke about utilizing a “strokes gained” statistic to check in with their progress on a particular element of the game. After a tournament or after a season, they check this statistic to see how they compared to the rest of the PGA-Tour players and find out which area they needed to work

on most. Andrew would set details how he sets “performance goals” like improving two tenths of a stroke putting. Josh says he sets outcome goals like “becoming a top ten player in the world.” Both Andrew and Josh liked the strokes gained statistics because it gave them a general picture of how they should structure their time, but they still had the freedom to alter their daily practice as they wanted. Andrew mentioned that earlier in his career he used to set practice goals that required him to accomplish a drill before he could leave. He reflected on this experience and mentioned that he did not find those goals as effective as the “performance goals.”

Across the board, each participant spoke about setting outcome goals like winning a tournament or qualifying for the Ryder Cup team. These were often seen as not overly effective because the participants recognized that short-term goals were more advantageous for their motivation during practice. Additionally, players were often left with feelings of failure after setting an outcome goal of winning a tournament. Frank spoke about this in detail and explained that “it didn’t work.”

Zach described using a mixture of goals: He long-term goals at the beginning of the year, short term goals, and then daily goals that help him accomplish the longer goals. Like the other participants, he recognized that sometimes he can get “caught up in the long-term goals as opposed to focusing on just what’s in front of [him].”

To summarize, goal setting seemed to be valuable to the extent that it provided motivation for these players to engage in practice. Once goal setting became overbearing or anxiety producing, it was seen as not helpful.

***Building confidence.*** Building confidence in practice was cherished by several participants and recognized as a major reward of practice. To the extent that the participants believe that practice is helping them increase their skill level and competency, they gain

confidence. In order to maximize this effect, they describe structure practice in a way that would promote this confidence. For example, Andrew altered his putting drills to promote feelings of competence by avoiding drills that could be “failed.” Josh spoke about moving closer to the hole when missing putts so that he would start making putts. Frank would develop a “go to” shot on the range so that he could feel confident bringing it out on the course. Zach mentioned feeling confident after a putting drill that he accomplished fast, meaning that he was competent, or accomplished slow, meaning that he worked for a long time and improved.

Like Zach, the other participants valued a hard day of work and gained confidence from it. Andrew mentioned that he love the feeling that he “earned a good night sleep.” To summarize, it appears that the participants would gain confidence from increasing their competency, but they also chose to have confidence as often as they could. They chose to be confident about their game and their approach to practice.

***Simulation.*** The data indicate that the participants valued a simulation strategies during practice. This allows them to simulate pressure that might be felt during a competitive round of golf. Frank spoke about playing with other elite pros during practice rounds so that he could both gain from their expertise, but also become comfortable playing around the highest caliber players. He mentioned that, in a tournament, he would purposefully seek out practice rounds with good players. Then, when playing with the same individuals he played in practice rounds, he would feel more comfortable.

Other simulation strategies included creating games in practice that emphasized the score. Andrew spoke about playing a game on the driving range where he would devise a point system based on his proximity to the flag. He would keep score and attempt to beat his previous score.

Josh mentioned that every time he practices putting he sets a task of “making ten three footers in a row.”

Although *pressure* in practice was seen as important, these players also describe how too much pressure is not helpful and leads them to rethink practice technique or strategy, if necessary. Andrew spoke about altering his putting drill to alleviate some of the pressure and self-deprecating behavior that would follow if he failed to accomplish the drill.

***Variation.*** Variation as it related to practice is described by these participants both as a way to facilitate engagement as well as a strategy to allow players to simulate tournament situations. During a golf tournament, a player will never have the same shot two times in a row. To the extent that players can mix it up as well as in practice was found to be beneficial in preparing for the random nature of shots experienced in tournaments. It is important to note that the participants did not utilize variation throughout the entire practice session. The players also recognized the need for “masked” practice, or repetitious practice that primarily focused on technique. As with other strategies, an appropriate balance between variation and technical practice was found to be the most beneficial in improving performance. The most prominent type of variation described in the data was the variation used from shot to shot. For example, when discussing their short game practice, Frank and Steve indicated that they both like to “move around” the chipping green and try different shots. They also indicated, along with Andrew, that this type of practice was “fun” and more enjoyable than technical practice.

These players also reveal that they use variation throughout the year to change up practice so that it is most beneficial to their specific training needs at any given time. Josh, for example, describes how he structures his practice based on his most recent tournament results. During the time of the interview he recognized the need to emphasize his iron-play so that he

could improve his weakness from the last tournament he had competed in. Changing up the general structure of practice was important for Josh so that he could continue to improve. Andrew also mentioned the need to have some freedom during practice to structure his time as he sees fit. He mentioned going away from daily tasks that he needed to accomplish in favor of setting more long term goals that allowed for more freedom and variation in practice.

Beyond shot to shot variation or variation relating to practice structure, variation was also used in other aspects of the participants practice experience. Josh mentioned wanting to test out a new driver so that he could improve his game off the tee. Switching equipment to maximize a player's game is another element of variation worth referencing. Additionally, Zach mentioned changing up his swing coach whether it be changing it up from moment to moment during practice, week to week, changing up equipment, or changing swing coaches, the data indicate that the use of variation often led to increased levels of engagement, more enjoyment out of practice, and was an effective way to prepare for tournament golf.

***Energy management and peaking.***

*I think it takes a lot of discipline. After a good practice I mean you want to be a little tired and like fatigued (Josh)*

The weekly grind on the PGA-Tour, as indicated by the participants, was exhausting and often taxing on the body and especially the mind. To perform well during a given tournament, the players wanted to fine tune their skills and be ready for the first round on Thursday. However, sometimes too much preparatory work, according to these players, could actually lead to mental fatigue during the tournament. Steve learned from early in his career that he needed to take a "rest day" in the middle of the week so that he could have enough energy to play well through the end of the day on Sunday.

Beyond managing their practice time to get ample rest before a tournament, the participants also indicated that sometimes it was necessary to take a few days off during the course of a season. Usually, these off days occurred after long road trips where the participants would be traveling and competing for several weeks in a row. Josh and Andrew both mentioned enjoying a few days off after these long stretches of competition. Further, players wanted to take time off after stretches of poor performance. Steve explains his experience with this and mentions wanting to go home and “reset” when his “fuse gets a little short.” Given the mental effort required to practice effectively as indicated by Josh, taking time to rest appeared to be beneficial in improving the quality of practice.

Josh also spoke about his attempts to peak for certain events in golf (i.e. world golf championships, the majors). He recognized that these events meant more to him and he would devote more energy in his preparation for these events. He also mentioned that he would alter his practice to work on the type of shots needed for a particular event. For the Masters, he mentioned he needed to work on drawing the ball off the tee. Thus, he would start working on this element of his game several weeks prior to the Masters.

**Being proactive.** The fourth major theme to emerge from these interviews is the elite athletes’ emphasis on being proactive with respect to practice and their game. When the participants were asked about times in their practice experience where they lacked motivation or experienced hardship, they were quick to describe the processes they were taking to overcome it. Perhaps this mentality has led them to their elite status and continues to be a strong contributor to

their success. Frank “didn’t have any quit in [him]” when times were tough. He mentioned occasionally taking a few days off, but was always thinking about ways he was going to improve. Similarly, Andrew mentioned that it was difficult for him to recall times where he lacked motivation and felt “so lucky” to get to play golf for a living. This proactive ways in which these participants dealt with challenges during practice relate to *a) navigating time constraints, b) becoming more efficient, and c) working through poor performances.*

***Navigating time constraints.*** As the participants achieved more success on the PGA Tour, some felt like their time to practice effectively was being challenged by outside factors. During a tournament week the players mentioned having to navigate club representatives that would ask them to try out new equipment. This was a new challenge for the participants as they started playing in PGA-Tour events. Andrew recognized that even though this was a potential challenge he also saw it as “a good problem to have.” He elaborated that the challenge of navigating fans and equipment companies when he was on the driving rang meant that he had made it to the highest level of golf and saw it in a more positive light. To navigate this obstacle, Andrew learned that he needed to go to the corner of the range that was less crowded so that he could focus more on practice. When playing practice rounds, Andrew would show up to the course around 6am so that he could be the first one off and have “a quiet course” to himself. For Frank, he learned how to say “no” to people who were asking for his time when he needed to practice.

***Becoming more efficient.*** In addition to finding strategies to avoid the distractions, the data also indicate that becoming more efficient was a way that the participants proactively dealt with added demands on their time. Both Josh and Steve mentioned reducing practice when they

are home so that they can spend more time with their families. Sometimes this meant cutting out less efficient parts of practice like casual practice rounds with buddies.

In addition to becoming more efficient in order to navigate time constraints, the data also indicate that quality practice can lead to more success over high amounts of unfocused practice. Andrew, Steve, and Zach all mentioned that they find practice to be more beneficial if they practice with an intense focus for a shorter amount of time. Ultimately, as Steve indicates, “Eventually you’re beating balls you get tired so you don’t want to overdo it.”

*Working through poor performances.* The few times the participants admitted that they struggled with their motivation to practice was after a stretch of poor performances. When things were really bad, sometimes the participants would take a few days off and then start when their “brain was fresh.” Josh would get very detailed about the specific changes he was going to make (e.g. equipment changes) and elements that he was going to work on during the night before practice. He mentioned being up at night thinking about everything he wanted to do the next day to improve. He recognizes that this may not be a normal experience for other individuals and refers to his colleagues and himself by saying, “us golfers are insane.” This relentless pursuit of excellence in spite of adversity was a common response during the interviews. As indicated earlier, participants rarely spoke about challenges, they just spoke about feeling lucky to be on the PGA Tour and wanted to do everything in their power to continue in their profession.

Having had more experience with poor performance and working through it, Frank highlighted several points that helped him through the process. He stated that he learned to lower his expectations and recognize that he was going to have about two months each year of great play and the other parts of the year were going to be tough. He also reflected on early struggles in his career and remembered that he would tell himself, “this is my job and I don’t want to lose

it.” Perhaps the most compelling part of his interview was when he described a big win he had in Las Vegas after several months of poor performances.

First time in my career that I had to submit my application to Q-school. I’m gonna lose my card. There’s only handful of tournaments left and I won that week. I won that week I went from 187 on the money list to like 40 and it was a five day tournament so I shot 28 under par and I beat PG11 by one and I mean how did that happen? I was having the worst year of my career and out of nowhere I win you know how does that happen? What happens is you know you just gotta keep at it, keep playing, keep your spirits up and all those things are really hard to do when you’re playing lousy but you know there’s no other alternative. This is this is my job and I don’t want to lose it.

## **Interpretation of Findings**

This study explores the way in which elite golfers think about, structure, and experience practice intended to maximize performance. The ultimate goal of this research was to explore effective practice experience and what strategies these participants utilized to get the most out of practice. The results indicate that these participants found their “Sweet Spot” and experienced the most effective practice when they were able to tailor practice, achieve balance, stay engaged, and maintain a proactive approach (see figure 2). However, each of these central themes emerge from the data around a single core finding, namely, the importance of individualization in practice for these athletes.

Thus, the core thematic findings spring from two, overarching results:

1. The most effective practice for these elite PGA Tour golfers is, above all, individualized.
2. For these participants, effective practice is reached when a player proactively tailors his approach to pursue appropriate balance and achieve consistent engagement.



Figure 2. Thematic Findings: Strategies to Reach the Sweet Spot

### **Theoretical Application**

While this study is informed by current data relating to the development of expertise, it seeks an understanding of what transpires after these professional athletes have already reached expert status. This phenomenon has yet to be explored in elite level golf, and thus may add to the quantitative and retrospective developmental literature and ultimately be helpful to players, coaches, and sport psychology professionals in the future.

Significantly, despite the fact that no prior phenomenological studies have examined the lived practice experience of elite PGA Tour professional, the core themes and subthemes that emerge from these data, can relate to the existing literature related to elite skill development and practice.

**Deliberate practice.** While deliberate practice theory primarily examines the developmental nature of expertise, both quantitatively and retrospectively, there are some tenets of deliberate practice theory that are worth noting as they relate to the data. According to Deliberate Practice Theory, the most beneficial and effective practice is broadly defined as “focused training” that “requires effort,” is “not inherently enjoyable” or “motivating” and involves engaging with full concentration and practicing the tasks that are most difficult for the individual (Ericsson, Krampe, and Tesch-Römer, 1993; Ericsson and Charness, 1994). The participants in this study did not practice to achieve an expert level; they had already achieved that. Instead, these participants practice to maximize their abilities even after they already became elite. For them, practice was multifaceted and structured to enhance technical and psychological aspects of the player’s game. In line with Deliberate Practice Theory, regardless of the type of practice the participants were engaging in, the data indicated that effective practice required discipline, focus, and mental stamina. This supports deliberate practice theory.

In general, the data indicated that repetitious practice used to enhance technique was the least enjoyable part of practice but was necessary thus relating to the theme of *tailoring practice*. This theme relates to Deliberate Practice Theory in that the participants recognized that sometimes they needed to incorporate less fun parts of practice to optimize their technical proficiency. Other necessary parts of practice involved using some creativity and variation to

simulate shots that could occur in a tournament. This part of practice was often described as “fun” for the participants. Thus, the technical elements of practice seem to support the effortful nature of deliberate practice theory while the simulation elements of practice contradict it. The latter supports critics of Ericsson’s Deliberate Practice Theory in that it is not inherently enjoyable (Gobet, & Erekü, 2014; Jenkins, 2010) Future quantitative research should explore the effectiveness of technical and simulation elements of golf practice.

**Motivation.** As indicated in the literature review, self-determination is, “...the capacity [and need] to choose and to have those choices, rather than reinforcement contingencies, drives or any other forces or pressures, be the determinant of one’s action” (Deci & Ryan, 1985, p.38). Although, there are some rewards that can occur from engaging in a self-determined activity, like golf practice, that have the potential to enhance intrinsic motivation. These rewards relate to feelings of autonomy and competency and are not “operationally separate from the activity itself” (Skinner 1953). The data and the emerging themes of *tailoring practice*, and *being proactive* support this theory and provide evidence that the participants satisfied needs of autonomy and competency when they engaged in practice thus fueling their intrinsic motivation to continue to practice. Multiple participants recognized that practice should build confidence. Further the data indicated that players were more motivated to practice after having a good result in a tournament thus, feeling more competent. This supports Deci & Ryan’s (1985) *Proposition II*—“Events that induce the perception of competence have the propensity to enhance intrinsic motivation” (p.62).

There were some external reinforcements in the data that cannot be overlooked. The top 125 players on the PGA Tour receive exempt status for the next year. While some participants

had reached a level where they were exempt for several years, all could relate to the feeling that their job status was dependent upon their performance. Further, even once the participants reach a level where they are not concerned with being kicked off the PGA-Tour, there are additional financial incentives to play well. The winner of a PGA-Tour event usually makes around 1.5 million dollars (Silverman, n.d.).

Further, Deci and Ryan's (1985) *Proposition III*, "controlling" aspects of feedback (e.g. losing your job) appear to exist in the players experience and may have incentivized them to work harder on their game. It is difficult to assess the true influence of these external motivators because the participants still remained optimistic and believe that the reward was in their control. Frank, for example mentioned that he didn't want his job to be taken away from him but also commented that he responded by taking control and believing that he was going to "bounce out of it." This mentality appears to support Deci & Ryan's (1985) *Proposition I*, that "an internal or external "locus of causality" will have enhancing or limiting effects on motivation respectively" (p.62). When the participants spoke of working through poor performances, they often described steps they took to overcome such a challenge. The *proactive approach* as indicated by the data appears to align with an internal locus of causality that enhances intrinsic motivation.

**Goal setting.** This study explored the experience of goal setting among the participants. Goal setting in practice was primarily used as a strategy for the participants to *stay engaged*. The data indicate that all the participants had experience in goal setting; however the level to which goal setting played a role in practice was widely varied. Generally, each participant mentioned the desire to pursue outcome goals that had to do with winning a tournament or qualifying for the Ryder Cup. The participants recognized that these goals were important to them, but they

explained that if they focused too much on the outcome, the quality of their practice declined.

Steve describes his experience with this:

I tend to do a little better when I can focus on the little things instead of looking at the ‘well if I do well here I can get in here and if I do this I get that’ that kinda gets me ahead of where I want to be kinda forget what I’m doing.

Performance goals were used most frequently during daily practice. This usually entailed the participants setting a standard during a drill that they would hope to meet. Josh spoke about doing a putting drill where he had to make ten putts in a row. Andrew, Steve and Frank mentioned playing games during practice where sometimes a point system would be used and performance could be evaluated. Zach mentioned setting a performance goal that he called a “short term goal” of breaking a previous low score for the year. He elaborated that this would then help him set “daily goals” to accomplish this short-term goal. While process goals were not directly referenced, the participants did speak vividly about the technical drills they would do in practice. Within these drills, they focus on technique. The participants stated that they do technical drills to “feel comfortable.” Thus, process goals were implicit in their discussions of technical work.

### **Optimal challenges.**

*I will sit there and hit drivers at that little foot bridge and try to get it through because it’s perfect distance for a driver for me. So I will try to hit, you know, I’ll hit drivers until I can get one to go in the foot bridge and I get so intense. I’m very intense with my alignment. I’m very intense visualizing the kind of shot I want to hit and so it really brings out something good in me when I try an incredibly difficult task. It’s three feet wide so it’s an incredibly difficult task and it brings out something really good in me. (Andrew)*

Flow in sport often accompanies elite performance and has been recently defined as “athletes’ full engagement in their athletic performance that involves an ideal balance among focus, enjoyment, the challenges of the competitive situation, and the athlete’s skills” (Carter, River, Sachs, 2013). The theme of *staying engaged* and subtheme of *simulation* that emerged from the data suggests that the participants recognized that when they manipulated practice to create some type of challenge, they experienced more quality practice than when they practice easier tasks.

However, it is important to note that easier tasks often were part of practice as well. Participants incorporated easy tasks that were designed to maintain a player’s skill level and build confidence from task accomplishment (competence), while the more difficult tasks were designed to facilitate engagement. While the participants expressed a strong desire to achieve a strong “focus” on every aspect of practice, their reflections indicated that it was more difficult to achieve focus for the mundane tasks as compared to the more difficult tasks. Further, the difficult tasks were often referred to as more “fun” than the easier tasks. As it pertains to Csikszentmihalyi’s (1975) concept of “Flow,” the data indicate that setting appropriate challenges in elite golf practice helps facilitate engagement.

**Variation.** Golf practice for each participant was multifaceted. They spoke vividly about incorporating repetitious practice where the participants would hit the same shots consecutively where the goal would be to focus on technique. Additionally, participants would incorporate variation in their practice. This variation existed on a shot to shot level (e.g. switching targets) and also on a structural level (e.g. altering practice to work on weaknesses). The goal of this

research was not to test the effectiveness of variation, but to simply explore the experience of variation in practice.

As it relates to the literature, “contextual interference effect” (CI effect) is defined as the “interference in performance and learning that arises from practicing one task in the context of other tasks” (Schmidt & Lee, 2005). Specifically, a CI effect is found when subjects are administered tasks of varying difficulty in random order, as opposed to performing those same tasks administered in blocks of similar difficulty. The participants in this study all reported incorporating variation in their practice to help facilitate engagement while also helping them to simulate tournament golf. While variation was a common practice strategy, it was not recognized by the participants as being more effective than technical practice, but rather served a different purpose. Variation was described as being more “fun” than technical practice.

Through an analysis of these findings, the theme of *achieving balance* emerged. Players described structuring their practice to encompass more technical elements if they deemed it necessary. When they felt more comfortable from a technical standpoint, they would utilize more variation strategies to simulate tournament situations thus practicing their ability to adapt as they would on the golf course. Future quantitative research should test the “CI effect” amongst elite golf professionals.

**TABLE 3: Theoretical Applications to Thematic Findings**

<b>Theoretical Applications</b>	<b>Themes</b>	<b>Relationship</b>
<b>Deliberate Practice</b>	<i>Tailoring practice</i>	-Players recognized that effective practice required discipline, focus, and mental stamina. The technical parts of practice were less enjoyable thus supporting Deliberate Practice Theory. The strategic elements of practice were enjoyable thus contradicting Deliberate Practice Theory.
<b>Self-Determination</b>	<i>Tailoring practice</i> <i>Being proactive</i>	-Players satisfied the needs for autonomy and competency
<b>Goal Setting</b>	<i>Staying engaged</i>	-Evidence for the use of outcome, performance, and process goals. Performance and process goals were found to be most beneficial
<b>Optimal Challenges</b>	<i>Staying engaged</i>	-Participants designed drills in practice that were challenging enough engage them while also being accomplishable to provide a sense of competence
<b>Variation</b>	<i>Staying engaged</i> <i>Achieving balance</i>	-Players utilized variation in practice to help them consistently engage. Variation was not solely used, it was balanced with repetitious, technical practice based on the player's current needs

## Conclusions and Implications

In conclusion, the findings suggest that for these elite golf professionals, self-knowledge impacts effective practice to the extent that it influences one's ability to achieve balance, stay engaged, and be efficient. As explained in Chapter 1, Golf is a unique sport that allows for multiple ways to achieve success. Further, the amount of time that one can play golf at a high level separates it from other sports. The data reflect these unique aspects of golf and therefore may not apply to team sports or other individual sports.

This study explored the lived experience of five PGA Tour professionals as they reflected on their practice experience. In accordance with phenomenology, the implications and application of this study go beyond generalization and instead emphasize vivid first person accounts of human experience (Valle, King, & Halling, 1989; Dale, 1996; Wertz, 2011). The data reflected *these* five participant's experience with practice. Although generalization is not the goal of this research, the thematic findings gathered from the data could be valuable for those who seek to improve their game or improve the games of those they work with (e.g. coaches, swing professionals, sport psychology consultants).

As it relates to the current study, Duckworth, Peterson, Matthews, and Kelly (2007) define "Grit" as "perseverance and passion for long-term goals, Grit entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress" (p.1087). Research suggests that grittier competitors are more likely to outperform their less gritty peers in performance in some arenas such as The National Spelling Bee (Duckworth, Kirby, Tsukayama, Berstein, and Ericsson, 2012) and the United States Military Academy (Duckworth et. al, 2007). The data clearly reflect core tenants of "Grit" in that in order to be successful, these participants had to persevere and maintain interest over a

long career. Those who pursue golf at all levels may benefit from a grittier perspective on golf where he or she maintains high interest during each shot of practice. Ultimately, in order to improve, a golfer needs to enjoy the process of getting better. In other words, a golfer needs to enjoy piecing together the puzzle, learning from mistakes, and embracing a full focus. To achieve this, a flexible practice structure may be useful that can be adapted to maximize the individual's level of engagement.

It is worth noting that individual differences in personality that may influence an individual's practice habits. The personality trait, openness to experience, or when the participant has the preference of, "using their imagination, playing with ideas, and otherwise enjoying a complex mental life" was negatively correlated with performance (Duckworth et. al, 2012, p. 175). In golf it appears that both "Grit" and "Openness to experience" may be necessary at different times during training. For example, when a golfer is working on repetitious swing mechanics, he or she may require a significant capacity for grit given that this training can take time. Tiger Woods sometimes took as long as two years before he admitted that he felt comfortable with a swing change. On the other hand, openness to experience and creativity in training may be appropriate and necessary for tasks requiring more touch and finesse (e.g. short game). Additionally, the day-to-day demands of working on swing changes may benefit from incorporating nuance in practice that may increase one's engagement.

## **Limitations**

Given the elite nature of the participants in the study, access was difficult and other sources of data that would incorporate triangulation were not possible. Additionally, member

checking was not able to be assessed given the hectic schedules of each participant. Further, the use of phone interviews may have provided a barrier to some authenticity and rapport that may have been achieved by doing the interviews in person. Despite said limitation, the data gathered was robust and rich with vivid first person accounts of practice experience.

### **Future Research**

As indicated in the data, the personality characteristics of each participant played a crucial role in his practice style. Frank, for example, explained that he was a “creative” player and liked to use his imagination in practice. Although it was not the goal of this research to assess personality factors that may influence practice effectiveness, it is conceivable these factors may be significant. Future research should quantitatively assess personality characteristics such as grittiness and how these characteristics impact practice effectiveness and a player’s ability to find his or her sweet spot.

Additionally, future research should address the quantitative nature of practice on the PGA Tour and differences and similarities that may exist across PGA Tour players. Multiple participants spoke about spending a different amount of time on practice than their fellow competitors. These differences may be related to subjective qualities such as talent that may be difficult to quantify. Further, the personal desires and goals of each player may contribute to the amount of time spent on the practice tee. Additionally, personality factors may also contribute to these differences (e.g. grittiness and openness to experience) and are worthy of future study.

While the participants in this study represented a broad range of potential experience levels that exist on the PGA Tour, they do not represent the upper echelon of players that have won a Major or achieved a top-ten world golf ranking. The experience for those golfers may

deviate from the golfers that participated in this study in that they may have to overcome more distractions from the media since they are more popular. Additionally, other groups of elite golfers such as those who play on the LPGA Tour were not explored throughout this study. Future research should look at other elite professional and elite amateur golf groups and their experience with practice.

Further, while the number of participants in this study falls within the prescribed parameters for phenomenological research, perhaps other or additional themes would emerge through subsequent studies. Given the high degree of individualization of golf practice which emerged as central to the practice experience of these athletes, it is possible to consider that, while future study would illuminate the actual experiences of other, different, elite golfers, it would reaffirm the individual nature of practice itself.

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## APPENDIX A

### Cover Letter (For Participants in Dissertation Research)

**STUDY TITLE:** Staying in the sweet spot: How elite level golfers engage in, structure, and experience practice throughout extended careers

#### INTRODUCTION:

**This consent form may contain words or information that you may not understand. Please ask the investigator to explain any words or information that you do not clearly understand**

This is a research study and thus only includes participants who choose to participate. As a participant you have the right to know about the procedures that will be used in this research study so that you can make an informed decision on whether or not to participate. The following information is presented to inform you on the current study so that you may give or withhold your consent to participate in this research study.

You are being asked to participate in this research because you are a current elite level golfer and have experienced practice throughout your career.

#### PURPOSE OF THIS RESEARCH STUDY

Golf is unique in that it is a sport that can be played for multiple decades at a top level. Thus, the experience of practice throughout an extended career may differ from other domains and offer unique challenges compared to other sports. Furthermore, golf is an individual game where many successful players have adopted personalized strategies that work for them.

The researcher is interested in **your** experience in engaging in, structuring, and planning practice throughout an extended career. Specifically, this research will be taking a look at the motivations and strategies used to maximize practice over the course of a long career.

#### HOW MANY PEOPLE WILL TAKE PART IN THE STUDY?

7-10 PGA tour players will be invited to take part in this study. Each will be currently on the PGA tour or have been on the PGA tour within the last five years.

#### WHAT IS INVOLVED IN THE STUDY?

In depth interviews ranging from 60-90 minutes will be conducted with each participant. These will be arranged around the participants schedule and will be in a location that is convenient and comfortable for the participant.

### **WHAT ARE THE RISKS OF THE STUDY?**

We anticipate minimal, if any, risks or discomforts for the participants. At any time the participant can stop answering a question, or stop the interview entirely.

### **ARE THERE BENEFITS TO TAKING PART OF THE STUDY?**

We hope and intend that the information learned from this study will help golfers of all skill levels to practice more effectively and understand the mental components of practicing at a high level.

### **WHAT ABOUT CONFIDENTIALITY?**

Each participant who chooses to participate in the study will be assigned a pseudonym after the consent form is signed.

The consent forms will be the only link to the participants' participation in the study. No identifying demographic information will be collected on the informed consent form. No identifying information will be released in the written transcriptions of the interviews or the treatment manuals.

Audio files will be kept for a period of 7 years after the study is completed. All audio files, signed consent forms, manuals, and interview transcriptions will remain in locked file cabinets and password-protected computers.

No identifying information will be released in the final structural description of the phenomenon or in the publication of findings.

### **WHAT ARE MY RIGHTS AS A PARTICIPANT?**

**Participation in this study is voluntary. You do not have to participate in this study.** If you decide to participate, you can change your mind and drop out of the study at any time. Leaving the study will not result in any penalty to you, the participant.

### **WHOM DO I CALL IF I HAVE QUESTIONS OR PROBLEMS?**

If you have any questions regarding your rights as a participant in this research and/or concerns about the study, or if you feel under any pressure to enroll or to continue to participate in this study, you may contact the University of Missouri Campus Review Board (which is a group of people who review the research studies to protect participant's rights) at (573)882-9585.

You may ask more questions about the study at any time. For questions about the study please contact Dirk Downing (cell: 314-406-7658; email: [dmdhxf@mail.missouri.edu](mailto:dmdhxf@mail.missouri.edu))

**APPENDIX B**  
**(Participant email)**

Participant,

My name is Dirk Downing and I study Sport Psychology at the University of Missouri. Although he recently retired from his work with the Athletic Department, Dr. Rick McGuire has and continues to be a mentor to me. In fact, he originally provided an opportunity for me to work alongside him with the golf teams at Mizzou. It is through this experience that I became interested in golf practice and the experience that goes along with practicing for an extended period of time. I believe that elite golfers face unique obstacles compared to other elite athletes due to potential length of a golf career. While other mainstream sports like baseball and football have average careers lasting roughly 6 years, PGA tour professionals often will extend their careers for multiple decades. Furthermore, PGA tour professionals have to develop mental fortitude, resilience, and motivation to continue to go out and work on their game even after many years of practice.

I believe that your experience and your story would help younger golfers approach practice in more beneficial, efficient, and rewarding ways.

Although this study seeks your experience in engaging in practice throughout an extended period of time, your name will never be made public and pseudonyms will be used to insure confidentiality. I've attached a document that outlines the study and what you can expect.

If you are able and willing, I would like to set up a time to interview you. We can meet in person or arrange a Skype session.

If you have any further questions, don't hesitate to contact me.

Email: [dmdhxf@mail.missouri.edu](mailto:dmdhxf@mail.missouri.edu)

Cell phone: 314-406-7658

Best,  
Dirk

## APPENDIX C

### INTERVIEW QUESTIONS: ELITE GOLF PROFESSIONALS

Date: \_\_\_\_\_ Location: \_\_\_\_\_ Time: \_\_\_\_\_ to \_\_\_\_\_

#### Interview Procedure:

Thank you for your willingness to participate in this interview process. The aim of this study to explore your experience with practice throughout your career thus far. Specifically, this study will attempt to examine how you think about, structure, and react to practice intended to maximize performance throughout a long career. Although I have a familiarity with golf, please elaborate and explain things in a way that non-golfers could understand. You are the expert of your experiences and this study requires that you be honest and open about these experiences. If there are any questions you don't feel comfortable answering, you don't have to. Additionally, your name as well as any names you mention will be changed.

#### Interview Question:

- 1) What have you experienced in terms of practice throughout your career?
- 2) What contexts or situations have typically influenced practice?
- 3) Recall a time when you were practicing extensively... Describe your motivation toward going out and practicing on a daily basis?
  - a) How does your previous tournament result impact your desire and motivation to practice the next week? The next month?
  - b) Tell me about rewards or satisfactions that come from a hard day of practice?
  - c) Describe a time when you had especially high motivation to practice? If so... why do you think you were highly motivated?
  - d) Describe a time when you were not as motivated to practice? What was this experience like? How did you work through it?
- 4) What role does goal setting play in your daily practice?
  - a) Do you set specific goals for different aspects of the game (e.g. short game, b) wedge game, driving range game)?
  - c) Long-term goals?
  - d) Short-term goals?
  - e) What is the process like for setting goals? How do you monitor progress?
- 5) How would you describe the amount of effort required to practice effectively?  
Are their parts of practice that are more effortful?

Are their times during the year where you have to practice more than other times?  
What is this process like?

6) How have your practice habits changed over time?

How did practice change once you were granted tour status?

7) How has your practice strategy changed? What factors influence your decision to change your strategy and what changes do you usually make?

8) Describe a typical day of practice...

a) Describe your experience with specific practice drills... Are there some that are more fun/ engaging? Are there some that are more grueling? What would influence your decision to utilize specific drills in practice?

b) How does this change throughout the year?

9) Tell me about your mental game during practice? What techniques or strategies have you found to be most beneficial? Self talk? Visualization?

10) How has turning professional changed your practice strategy?

a) What obstacles have you faced in your training once you turned professional?

11) What parts of practice are most rewarding?

a) How do these rewards influence your motivation to practice?

12) What parts of practice, if any, require the most discipline? Challenging?

a) What is your experience in selecting challenging tasks during practice versus less challenging tasks?

b) Do you notice changes in your engagement depending upon the difficulty of the practice drill?

13) Is there anything else relating to your practice experience that you would like to share?

Thank you for participating in this interview. Your time, experience, and expertise will greatly enhance the quality of this study. If you think of anything else you'd like to add to this interview you can reach me at [dmdhxf@mail.missouri.edu](mailto:dmdhxf@mail.missouri.edu).

## APPENDIX D

### Interview Tagging Sample (Steve)

P3: Yeah so I you know I played well enough where I got to play with some of the bigger names in a bigger tournament they were all playing that week and I got lucky enough to get to play with them umm you know you you try too caught up in what they do but at the same time you try to learn a thing or two. Umm maybe figure out how to manage your game a little bit better (RQ 1; strategies/ motivational; guidance from other pros).

Dirk: Yeah. Was there anything specifically from that moment that you kind of took with you going forward?

P3: Umm. You know I I played with PG2 on Sunday he obviously didn't have his best stuff at the time umm or at least that Sunday. I ended up beating him and I I was pretty excited about it. I was like alright I beat this guy and then he won like the next three tournaments or something umm but it was you know playing with him and PG9 just PG9 on Saturday it was super windy and terrible outside I mean it wasn't wasn't playing all that great wasn't playing all that great kinda hung around and made a couple birdies late. He ended up beating me by a couple and it was uhh it was kind of one of those things made you learn how to be a little bit more patient (RQ 1; strategies/ motivational; guidance from other pros).

Dirk: Yeah. Cool. So now recall a time when you were practicing extensively could be last week it could be earlier this year or in years passed. Describe your motivation towards going out and kinda practicing you know on a daily basis?

P3: umm. You part of it is that I still like to golf and I go play with my buddies when I'm home and it's not really it's not really work most days I guess umm you know still enjoy it still like going just like anybody who enjoys their job I guess. They like doing it. Umm but it umm you know you want to be better you want to beat those guys when you go back out there. Umm you want to get yourself in to some other tournaments umm you know there is always something to play for, something to improve upon. (RQ 1; strategies/motivational; play games/ making it fun) Umm do you need breaks here and there but um, if I sit around for a minute too long especially on a nice day it kinda drives me nuts. I just want to go outside (RQ 1; strategies/ motivational; taking time off).

Dirk: Yeah, cool. So how does a previous tournament result impact your desire or your motivation to practice the next week or the next month?

P3: umm (can't determine) I guess for me maybe changes how you practice. Umm you know when you're not playing well you're more or less you're searching trying to get back to your basics trying to trying to find something that clicks (RQ 2; less fun parts of practice) umm and when you're playing well you kinda have things sorted out and you kinda trying to strike while the iron is hot golf's a lot of fun you know you're playing well not a lot of mistakes. You're kinda I shouldn't say more fun to play it it becomes easier you know it's like alright let's go play

your not hitting as many out of the rough or the trees trying to find things so it's kind of a you go up and down a little bit but the drive I guess is... What you're trying to do sometimes changes.

Dirk: Right on. So tell me about the rewards or satisfactions that come after a hard day of practice.

P3: Umm. You know I you feel today I feel like I accomplished something umm especially if I've been searching and (can't determine) golf course and feel like I've found a umm I don't know what you want to call it uhh something something that kind of clicks. Or you can find a little (6:34) little reminder that gives you keep hitting it the way you want to or you you found a little something in your putting stroke and you you're holing putts you feel confident over it. Something that umm you feel like you've improved it's always nice to to leave the golf course you feel like you've accomplished something. (RQ 1; strategies/ motivational; rewards)

Dirk: So describe a time when you had especially high motivation to practice. Umm if so, why were you so highly motivated?

P3: Umm trying to think so I guess some examples. Are you gonna need more than one example of this?

Dirk: No. Just whatever comes to mind. You're doing a great job.

P3: Okay. Umm you know trying to get your tour card when you're on the web.com umm when you're trying to move up you know you really got the itch and the bug you know you you're really trying to get moving you know change your status umm up to another level you're trying to get to the PGA tour and then once you get there umm you're working really hard to keep your card. (7:36) you're not on the same playing field as the guys who kept their cards. You don't know when you're getting in umm you have a good idea but you don't really know until the Friday before umm it can be a little bit tough you're you know you're kind of pushing uphill and then umm for instance... Last year I wasn't having a great year and you're kind of pushing at the end and you practicing hard to try to find something good to make sure you get in to the playoffs. So it kind of umm sometimes changes what you're playing for but umm you know you're always looking to try to achieve something and you're getting ready for a U.S. Open or a Masters umm you can always find little little ways to find get make sure hours of practice in. umm couple days a week or something like that (RQ 2).

## **APPENDIX E**

### **Research Questions**

1. What practice strategies (motivational) and methods (technical) do elite golfers perceive to be most effective to improve performance and when they engage in this training, what are their experiences?
2. What are the challenges that elite golfers face in their training and how do they report their experience in overcoming these challenges?
3. To what extent do elite golfers report variation in their training methods and how does the perception of variation impact their experience?

## APPENDIX F

### (Participant information)

**Frank.** Frank is 53 years old and has been a professional golfer for more than three decades. Prior to competing professionally, he was a highly successful college golfer, helping his team win the NCAA championship. As an elite amateur, Frank was invited to play for the United States Walker Cup team: top U.S. amateurs who compete against the top amateurs from Great Britain and Ireland. After the Walker Cup, Frank turned professional. During his PGA career, Frank won four times between 1991 and 2000 and achieved a top 50 world golf ranking. His best finish in a major tournament was sixth. Frank now competes on the Champions Tour, the most competitive tour in the world for men over the age of 50, where he has three tournament wins.

**Andrew.** Andrew is 29 years old and has had mixed success in his golf career. In 2014 he earned PGA-Tour status after finishing in the top 20 on the Web.com Tour, a professional tour one level below the PGA-Tour that awards PGA-Tour status to selected members for one year, based on their end of the season ranking. By the end of 2014, Andrew lost his PGA Tour card by finishing outside the top 150 in world rankings. Andrew went back down to the Web.com Tour and regained his PGA Tour card in 2016. Andrew won his first and only PGA Tour tournament that year, and as a result, was granted PGA-Tour status through the end of the 2018 season. Andrew has played in one major event on the PGA Tour and failed to make the cut.

**Steve.** Steve is 30 years old and, in 2016, became one of the top 30 players in the world. He turned professional in 2009, successfully competing on the Web.com Tour to qualify for the PGA in 2013. Since turning professional, Steve has never lost his PGA-Tour card. Consistent and steady play has propelled Steve's game, giving him strong major results and top 10 finishes on two occasions. Steve's recent performance has slumped somewhat compared to his remarkable 2015 performance when he won for the first time on the PGA-Tour.

**Josh.** Josh is 31 years old and ranked in the top 20 professional golfers in the world. Of the participants in this study, he is the only one to be born outside the United States. He turned pro in 2007 and played for five years on the mini-tours. His first full year on the PGA-Tour was in 2012, and in 2014 Josh started to play some of the best golf of his career, finishing in the top 50 in the FedEx Cup standings. In 2016, Josh won two events including a World Golf Championship. Behind the majors, World Golf events are regarded as the most prestigious events to win and often have the most talented players playing in the field. Josh finished the 2016 year ranked in the top-twenty in the world rankings.

**Zach.** Zach is 28 years old. He qualified for the PGA-Tour in 2014 and made 11 out of 22 cuts and finished just outside of the top 150 in FedEx Cup points. He failed to keep his PGA-Tour card for 2015. However, in 2015 he went back to the Web.com Tour and won for the first time, thus giving him exempt status for the PGA-Tour in 2016. Since 2016 Zach has been playing on

both the PGA-Tour and the Web.com tour and has not quite achieved consistent eligibility on the PGA-Tour. His best finish on the PGA-Tour was a tie for 18<sup>th</sup> place in 2016.

## VITA

Dirk Downing grew up in Saint Louis, Missouri where he pursued golf as a junior and in his high school years. In addition to golf, Dirk also explored other sports growing up including: swimming, diving, baseball, basketball, and football. In addition to being involved in athletics, Dirk also played saxophone in his high school jazz band and continued this pursuit at the University of Missouri where he was featured on three albums released by the MU concert Jazz band (2009-2012).

During his masters program and throughout his doctoral program under mentorship of Dr. Richard McGuire and later Dr. Scotta Morton, Dirk began working with the University of Missouri women's golf team (2013-2017), the women's soccer team (2014-2016), and eventually the men's golf team (2016-2-2017). Here, Dirk provided sport psychology service to the coaching staff and the players on each team. Additionally, Dirk attended staff meetings where he collaborated with the coaching staff, academic coordinators, strength coach, compliance personal, and the athletic trainer on ways to provide better service and support to the student athletes.