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Deliberate Practice–Part 1: A Brief Overview

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Abstract

Many individuals' proficiency does not increase with greater accumulation of experience; rather, their capabilities usually plateau once they achieve a level of acceptability. Improving one's performance is complex and multi-faceted (e.g., physical, intellectual, skill acquisition, resiliency) endeavor. Research has shown that deliberate practice is effective at increasing one's level of capabilities. This article, the first in a two-part series, will describe what deliberate practice is, with the second article providing applicable recommendations on how to implement deliberate practice.

Introduction

Research has shown that continued experience in one's profession, hobby, or endeavor does not always lead to an increase in performance. In fact, Dr. Anders Ericsson, who spent his entire professional life studying expertise and what it takes to become an expert,[1] states that "most professionals reach a stable, average level of performance, and then they maintain this modest level for the rest of their careers."[2] This concept (i.e., the stagnation in increased proficiency) has been shown in numerous professions, ranging from medical professionals to typists.[4] In fact, in 1936, Dvorak et al. determined that for a typist to improve their typing speed, they would need approximately fifteen to thirty minutes outside of their work responsibilities to focus on typing at ten to twenty percent of their normal typing speed.[5] Dr. Ericsson writes that "the doctor or the teacher or the driver who's been at it for twenty years is likely to be a bit worse than the one who's been doing it for only five," which he associated with the automation of their tasks and the lack of intentional improvement.[6]

For a person to improve their level of performance, their efforts must be continuous, purposeful, and strategic, with the needed overload to their preparation.[7] It is possible to continue to improve one's abilities, despite years of experience in the endeavor. In fact, for certain events, such as endurance-based endeavors, it takes decades for one to truly peak in their capabilities and performance.[8] In 1993, Dr. Ericsson coined the term deliberate practice. Deliberate practice is characterized as practice that is specific, purposeful, and challenging, while requiring focus, goals, effort, and feedback.[9,10,11,12] This article is the first in a two-part series covering deliberate practice. This article will briefly review what deliberate practice is, with the second article providing recommendations for how to implement deliberate practice.

Society does not Understand "Talent"

Before we discuss deliberate practice, let us first talk about talent. Our society usually associates another person's high level of performance with a natural ability (i.e., talent).[13] Geoff Colvin, in his book *Talent is Overrated*, defines talent as "a natural ability to do something better than most people can do it."[14] In our society, when we see individuals perform feats that we are unable to do, we equate

that with the other person having "talent" that we do not have (i.e., they were just born lucky).

There is such a thing as talent and genetics. Williams et al. believe that high-achieving athletes reach their proficiency through the complex interactions of genetics, opportunities, environment, and optimal practice.[15] However, Williams et al. also emphasize that elite athletes have invested significant time and effort into their sport to achieve their level of excellence.[16] Thus, the default belief that the vast majority of us simply do not have the talent to become better and control our own lives should be seen as a myth, an easy excuse, and a limit or barrier to recognizing our potential. In fact, Dr. Ericsson believes the only trait that we cannot control is our height.[17]

Humans who overachieve in their pursuit will often do so through their unseen efforts (i.e., their preparation when nobody is watching or mandating their actions).[18] One notable example is legendary professional basketball player, Kobe Bryant, commonly regarded as one of the best basketball players of all time. When people discuss Kobe Bryant, particularly those who knew him and played against him, the majority will discuss his relentless work ethic, dedication to the game, and detailed focus on the fundamentals.[19,20,21] Research has shown that more high quality practice is associated with greater levels of performance in musicians,[22] athletes,[23,24,25] medical professionals,[26] and children,[27] as well as in various tasks, such as free throw shooting and memorization.[28] Dr. Ericsson believes that "we have far more power than we ever realized to take control of our own lives."[29] As stated by Geoff Colvin, "great performance is not reserved for a preordained few. It is available to you and to everyone."[30] We cannot control our genetics or talent, so therefore, we should focus on what we can control; our preparation, to include how we practice in our pursuit.

"But, we now understand that there's no such thing as a predefined ability. The brain is adaptable, and training can create skills. . . that did not exist before."

— Dr. Anders Ericsson

Types of Practice

Dr. Ericsson brackets practice into three groups; naïve practice, purposeful practice, and deliberate practice.[31] Naïve practice is simply repeatedly engaging in an endeavor and expecting it will improve performance.[32] This is often seen in individuals who gain experience via time in their profession for years and falsely believe that they are improving their capabilities as they accumulate years of experience. Purposeful practice is defined as practice that is well-defined with specific goals, focused, outside of one's comfort zone, and having feedback.[33] Or, as stated by Dr. Ericsson regarding purposeful practice, "get outside your comfort zone but do it in a focused way, with clear goals, a plan for reaching those goals, and a way to monitor your progress. Oh, and figure out a way to maintain your motivation."[34]

However, of all three types of practice, data has shown that deliberate practice is superior to naïve or purposeful practice. According to Dr. Ericsson, deliberate practice consists of: (1) continuing off the foundation of what others have discovered; (2) building off a person's previously acquired skills; (3) pushing one outside of their comfort zone; (4) full attention to the task at hand; (5) feedback and modification; (6) specific goals; (7) the creation and reliance of mental representations. These concepts are summarized in Table 1.[35]

Deliberate Practice Builds off What Others Have Learned

For practice to be considered deliberate, it must build off what others have learned. This means that adventure or experimentation in an endeavor is not deliberate practice, even if it has a deliberate intent. Rather, to be classified as deliberate practice, one is

building off skills, knowledge, and techniques that have been established by others through their own adventure, experimentation, discovery, practice, breakthroughs, and achievements. Furthermore, Dr. Ericsson states that for practice to be considered deliberate practice, it requires a field that has elite performers and clear top performers in that field.[36] Thus, deliberate practice is often overseen and guided by a coach, teacher, or mentor.[37] In fact, having a coach, teacher, or mentor is one distinguishing feature of deliberate practice when compared to purposeful practice. Purposeful practice can be individually led with much effort, but deliberate practice usually requires a person to oversee the practice to help guide, inform, and provide intentional purpose.[38] As stated by Dr. Ericsson, "deliberate practice is purposeful practice that knows where it is going and how to get there."[39]

"Deliberate practice is a very specialized form of practice. You need a teacher or coach who assigns practice techniques designed to help you improve on very specific skills."
— Dr. Anders Ericsson

Deliberate Practice Builds on Previously Acquired Skills

Learning can be simply defined as "a change in the capability of a person to perform a skill."[40] According to the Fitts and Posner Model, (which is only one model on learning), learning has three stages, the cognitive, associative, and autonomous stages, respectively.[41] As one progresses from the cognitive stage to the autonomous stage in the Fitts and Posner Model, actions become more automatic, relying less on conscious effort, accompanied with fewer errors.[42]

For practice to be labeled as deliberate practice, it must build off a person's previously acquired skills (i.e., new skills are built off existing skills).[43] For beginners, skills should be basic, while emphasizing the fundamentals. As one progresses throughout the learning continuum, more advanced skills can be incorporated into training. As stated by Dr. Ericsson, "over time this step-by-step improvement will eventually lead to expert performance."[44]

Deliberate Practice Pushes One Slightly Outside Their Comfort Zone

Deliberate practice must take someone just outside their comfort zone and current level of proficiency.[45] Therefore, deliberate practice requires near maximal effort and is often not enjoyable.[46] Of note, a common trend is that higher performers focus on skills slightly outside their comfort zone, while their less skilled counterparts focus on the skills that they are comfortable with executing. For example, Coughlan et al. told expert and intermediate Gaelic football players to practice two types of kicks using their non-dominant and dominant feet, with the expert players focusing on improving their ability to kick with their non-dominant feet and the intermediate players choosing to focus on their dominant feet.[47]

The concept of working slightly outside one's comfort zone has been shown to also improve vision[48] and memory.[49] Regarding vision, researchers discovered that through training three times a week for thirty minutes per session for three months, middle-aged people (i.e., over the age of fifty) who had presbyopia (i.e., degradation of near vision) improved their ability to read letters up to sixty percent smaller, while also improving their ability to read faster.[50] For memory, Dr. Ericsson trained a person in over two hundred sessions to be able to remember eighty-two random digits (repeated at a frequency of one per second), with simple overload (i.e., asking him to try to remember just one more number than his previous record) being a central feature of the training.[51]

"This is the fundamental truth . . . If you never push yourself beyond your comfort zone, you will never improve."
— Dr. Anders Ericsson

Deliberate Practice Requires Full Attention

Since deliberate practice requires being outside of one's comfort zone, it requires full attention. Therefore, deliberate practice is usually not enjoyable, it is considered taxing, and it is not categorized as play. Those who perform at higher levels often associate their practice as less enjoyable and more effortful than those who perform at a lower level.[52,53,54] Individuals who do not push themselves in practice rely on their previous ingrained autonomic responses when they engage in practice, whereas individuals who are trying to improve their performance are cognitively engaged in their endeavors.[55] Lastly, since deliberate practice requires full attention, it can only be maintained for about four to five hours per day with adequate rest (naps, sleep, recovery, downtime) needed to support the attention required.[56]

Deliberate Practice Requires Feedback

To improve one's skill, feedback is required. As stated by Ericsson, "merely performing the same activities over and over without immediate feedback on the outcomes does not in and of itself lead to improved accuracy of performance – it primarily leads to reductions in the level of effort."[57] Deliberate practice requires feedback to allow for modifications and greater adaptations from the skill being pursued.[58] Feedback should be immediate, objective, and relevant. For amateurs, this requires greater reliance on a coach; however, for experts, they can have greater reliance on themselves, as they have the needed knowledge to adjust their technique.[59] The feedback required can come in many modalities, such as a coach, accuracy assessments, time recordings, cell phone video footage, or other more expensive technologies (e.g., motion capture or force plates).

Deliberate Practice Requires Specific Goals

When it comes to reaching the next level of performance, goals are critical and necessary for progression. Ideally, one's goals are detailed with great specificity. However, a general vague idea of where one wants to be can lead to increased performance.[60] (Knowing you want to improve without a clear path can still be useful).

Summary of Deliberate Practice
Improving skills that others have discovered; thus, requires a coach, especially for novice and intermediate participants.
Builds on one's previous skill sets; thus, requires a baseline of proficiency.
Pushes one outside of their comfort zone (e.g., exercise, drill, routine); thus, requires maximum effort.
Requires full attention and conscious effort; thus, is not relaxing.
Involves feedback and modification of the work; thus, demands a coach (virtual or present), or an ability for an expert to assess (self or technology) their technique.
Designed with specific goals for improvement; thus, is not play or adventure.
Leads to and produces effective mental representations; thus, requires rest and restoration to store and code the mental data.

Table 1. Summary of Deliberate of Practice

One's long-term goal should be broken up into numerous short-term goals.[61] Elferink-Gemser et al. state that "research has shown that there are several ingredients to being successful in reaching the short-term goals which can be broken down into 'to know, to want, and to do.'"[62] Goal setting can be done personally by the individual, by a person of authority (coach, parent, mentor), or a group (team). However, the benefit of using a coach, teacher, or mentor is that they can develop a well-defined goal, measure progress, and set new goals to enhance progression.[63] When it comes to goal setting, the acronym SMART is often recommended, with SMART standing for: Specific, Measurable, Achievable, Relevant, and Timely. Lastly, reflection, planning, monitoring, and evaluating the preparation process of an athlete during their goal endeavor is powerful for improving performance.[64]

Deliberate Practice Leads to Mental Models

Lastly, deliberate practice relies on and creates mental representations, and notably, the reliance and the creation of mental models are linked. Thus,, notable improvements requires mental models and representations, and with further improvement, these mental models become more refined, detailed, and effective.[65] For those who perform at higher levels, there is a greater amount of reflection and cognitive processing before, during, and after practice sessions.[66] Over time, these mental models lead to an increase in the ability to anticipate the situation, such as observing and orienting on rapidly occurring events and postural cues.[67] Dr. Ericsson believes that what makes experts unique is that their years of dedication have altered the neural circuitry in their brains to allow them to have superior memory, problem solving, pattern recognition, and other advance adaptations. For example, quarterbacks who spend more time watching film create greater mental representations of the game.[68] Tom Brady, winner of seven Superbowl championships, demonstrated this with his relentless studying of film, which offset his physical limitations (e.g., sprinting, change of direction, top velocity).[69] When developing practice sessions, a word of caution should be noted for focusing too much on isolated drills, as they do not lead to mental models. The lack of mental models can reduce anticipation and perceptual cognitive abilities. Regarding mental models, elite athletes are better at finding cues, deciphering relevant information, and knowing where to look to anticipate the unfolding events of the game.[70] Additionally, elite players are better at recalling accurate information and the sequencing of events after the events

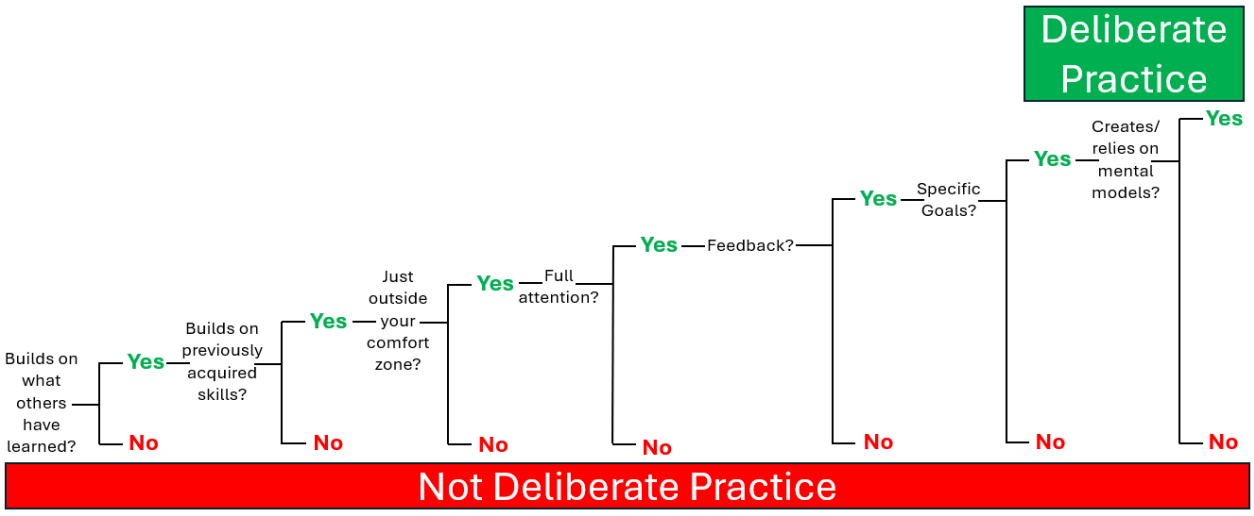


Figure 1: Flow Chart for Deliberate Practice

unfold.[71,72] Thus, games or scenario-based training is critical to elicit mental models, since adaptability and developing hierarchy or probabilities are needed to progress to higher levels of performance.[73] Lastly, creating mental models are not only the result of learning, but can also assist in facilitating future learning.[7]

Conclusion

Figure 1 displays a flow chart for whether one is engaging in deliberate practice or not. Deliberate practice is one way, not the only way, to develop expertise. For example, a 2014 meta-analysis determined that deliberate practice accounted for the variance in performance by twenty-six percent for games, twenty-one percent for music, and eighteen percent for sports.[75] In addition to practicing, individuals can engage in many activities (e.g., journaling about their preparation and performance, watching others perform, reading on their endeavor) to improve their proficiency.[76,77] Data demonstrates that a greater number of practice hours (i.e., quantity) influences proficiency, but it does not account for the full variance in performance, thus the quality of practice matters in conjunction with other variables.[78,79] Since quality of practice matters, the concepts of deliberate practice provides us with an excellent framework to enhance the quality of practice. The next part of this two-part series will provide recommendations for how to implement deliberate practice

"Generally the solution is not 'try harder' but rather 'try differently.'"
— Dr. Anders Ericsson



Biography

Jeremy Carter (featured right) is the Founder, Owner, and President of True Performance Realization (TPR), and serves as the Editor-in-Chief for the *True Performance Realization Applied Journal* (TPRAJ). With over eighteen years of experience in human performance, Jeremy has earned numerous certifications, including the National Strength and Conditioning Association's (NSCA's) Certified Strength and Conditioning Specialist certification with Distinction and the American College of Sports Medicine's Exercise Physiologist certification. Along his journey, he has earned four master's degrees. He is a current reviewer for the NSCA's *Strength and Conditioning Journal* (*SCJ*), a founding member and editor for the *Journal of Sport and Human Performance*, and a recipient of the NSCA's *SCJ*'s 2023 Editorial Excellence Award. In 2025, he was awarded as a Distinguished Graduate of the Louisiana Tech University's Kinesiology Department, and in 2026, he was the College of Education Alumni of the Year for Louisiana Tech University.

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