

Deliberate Practice – A Primer
A Resource for Expert Skills Program at Texas Tech
John Pelley, PhD

*“Some people want it to happen, some wish it would happen,
others make it happen.”*

- Michael Jordan, Former NBA star regarded
as one of the greatest athletes in any sport

The way that superior performers “make it happen” is called Deliberate Practice. Deliberate Practice (DP) has become a state-of-the-art concept that is applied in numerous areas of human performance, including the practice of medicine, with the purpose of developing expert level skills (Ericsson, 2004). These studies were born out of curiosity to look beyond the development of minimum adequate skills and to discover what type of practice produced superior performance. This has obvious importance in the practice of medicine since patients rarely ask to be seen by a physician who is “minimally adequate.”

This primer serves as a research-based introduction explaining the basic elements of DP that can be applied at the beginning of medical training, or even during pre-health education to improve competitive ranking for admissions.

*“I’ve missed more than 9,000 shots in my career. I’ve lost almost
300 games. 26 times, I’ve been trusted to take the game winning
shot and missed. I’ve failed over and over and over again in my
life. And that is why I succeed.”*

- Michael Jordan

This quote reveals how an athlete with superior skill development regards the role of self-awareness in his success. His awareness of his unique limitations led to many extra hours of practice working on specific shots – sometimes for as many as 1,000 repetitions. Additionally, he would do a special core strength workout before joining the regular team workout with the Chicago Bulls – reinforcing the introductory quote, “...some people make it happen.”

Background and Clinical Relevance

A simple observation guided the studies on human performance. When examined more closely, it was found that the admonition that “practice makes perfect” was not necessarily true. Practice only makes permanent. The type of practice carried out determines the difference between expert skill development and the maintenance of mediocrity. Superior physicians (as well as professional athletes, musicians, chess players, etc.) always use a type of focused effort called Deliberate Practice. This has caused researchers to reject the “you’ve got it or you don’t” belief and to conclude that high achievement doesn’t necessarily require a particular inborn talent. As outlined in the characteristics and examples of DP below, while high achievement doesn’t require inborn talent, it does require motivation and maturity – mainly because it isn’t easy.

Much of the study of DP in medicine has occurred over the past decade and has been applied to clinical skills ranging from the more obvious surgical procedures to more subtle skills in perceptual (imaging) diagnosis and medical diagnosis (Ericsson, 2004; Wayne, et al., 2008; McGaghie, et al., 2011). This primer will be focused on skills needed prior to clinical skill training, namely cognitive learning skills. Cognitive learning skills prepare students for clinical skills primarily because there is fundamentally no difference between the two. Clinical practice, at the expert level, requires a constant application of cognitive skills. The cognitive skills addressed in the Expert Skills Program at Texas Tech are a step beyond typical study skill strategies because they establish the Growth Mindset that has been shown to produce increased academic performance (Dweck, 2006). The Growth Mindset utilizes the self-awareness of how the brain functions in deciding how to apply Deliberate Practice strategies. Thus, the use of DP at the earliest opportunity will not only make medical school more manageable academically, but it will produce expert clinical performance at the fastest possible rate for each individual.

Deliberate Practice Examples

Deliberate practice in the development of cognitive skills can be illustrated by the conscious development of personality type skills that are generally unconsciously applied in everyday thinking. Any of the personality types discussed in the SuccessTypes book (Pelley and Dalley, 2008) can serve as an example of such skills. Here we compare a strategy for introverts to develop extraverting skills with a strategy for extraverts to develop introverting skills.

- Introverts can practice saying out loud what they are thinking as they construct a concept map of the topic they are learning. Forcing motor output from the prefrontal cortex creates a moment of truth as Broca's area tries to integrate information to explain the decisions that go into map construction. Repeated practice of this simple strategy will prepare the introvert for dialogue in team learning settings.
- Extraverts can also practice out loud, but not to say what they are thinking. The task is to say out loud their paraphrased version what a study partner is thinking (or, this can work by periodically stopping a video and paraphrasing what the teacher has just said.). While the speaking part will be comfortable, the listening part will not. After repeated practice of this simple strategy, the extravert will begin to interpret and to ask questions as the listening skills develop.
- While both of these strategies can be practiced alone, feedback provided by a partner – ideally a teacher – will greatly accelerate skill development.

Deliberate Practice Characteristics

1. Deliberate Practice is a focused effort designed for the purpose of improving performance. It is most effective when accompanied by a teacher's guidance.

- Since the nature of teaching is to create self-directed learning, a teacher is most important early and progressively less important. After competency is achieved, the student can self-teach.
- A teacher helps to define what needs to be improved.
- The practice usually challenges the student to exceed their current abilities.

2. Deliberate Practice requires a lot of repetition, but with focus.

- The reason that everyone doesn't use DP is that it isn't fun – but, then again, not everyone chooses to become an expert.
 - *Miles Davis, jazz trumpet master, commented during an interview that he didn't play ballads anymore. When pressed for a reason, he replied, "Because, man, I love to play ballads."*
 - DP is also not necessarily work, nor is it play. It is just focused effort (Colvin, 2011).
 - Studies show that expert skill levels are only achieved after about 10,000 hours of DP (Gladwell, 2009). In an average medical practice, this is about five years after board certification.
3. Deliberate Practice requires continuously available feedback.
- Opportunity for feedback is built into the clinical setting, but is not well developed in preclinical education.
 - The learning methods available in the Expert Skills Program are designed to provide needed feedback in the preclinical curriculum.
4. Deliberate Practice is hard to sustain, so it makes you tired.
- The normal reaction to skill development is to continue to practice a skill at the first successful level of difficulty, e.g. skill in memorization leads to the use of time to memorize more. This is more comfortable and less threatening.
 - DP is always looking ahead to the next level, e.g. mastery of memorization is then utilized to find patterns and relationships in the memorized material.
 - Studies show that some types of physicians who settle for the skills developed in residency actually decrease in performance over time rather than staying the same (Ericsson, 2008).
5. Deliberate Practice changes the brain physically.
- Actually, any practice changes the brain physically because learning cannot occur without the growth of neuronal dendrites (Zull, 2000).
 - Dendritic growth makes practice permanent – thus, practice can produce mediocrity as efficiently as it can produce excellence.
 - Steady progress toward expert performance occurs because the brain is always ready to grow more dendrites.
 - The path to expert performance involves growing the right dendrites.

References

1. Colvin, G. (2008) *Talent Is Overrated: What Really Separates World-class Performers From Everybody Else*. New York: Penguin Group.
2. Dweck, C. (2006) *Mindset: The New Psychology Of Success*. New York: Random House.
3. Ericsson, KA. (2004) 'Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains,' *Academic Medicine*. **79**(10 Suppl): S70-81.
4. Ericsson, KA. (2008) 'Deliberate practice and acquisition of expert performance: A general overview,' *Academic Emergency Medicine* **15**: 988-994.

5. Gladwell, M. (2008) *Outliers: The Story of Success*. New York, NY: Little, Brown, and Company.
6. McGaghie, WC, Issenberg, SB, Cohen, ER, Barsuk, JH, and Wayne, DB. (2011) Medical education featuring mastery learning with deliberate practice can lead to better health for individuals and populations. *Academic Medicine* **86**(11): e8-9.
7. Pelley, JW and Dalley, BK. (2008) *SuccessTypes In Medical Education*, www.ttuhsu.edu/SOM/success.
8. Wayne, DB, Barsuk, JH, O'Leary, KJ, Fudala, MJ, and McGaghie, WC. (2008) Mastery learning of thoracentesis skills by internal medicine residents using simulation technology and deliberate practice. *Journal of Hospital Medicine* **3**(1): 48-54.
9. Zull, J. (2002) *The Art Of Changing The Brain*. Sterling, VA: Stylus Publishing LLC.