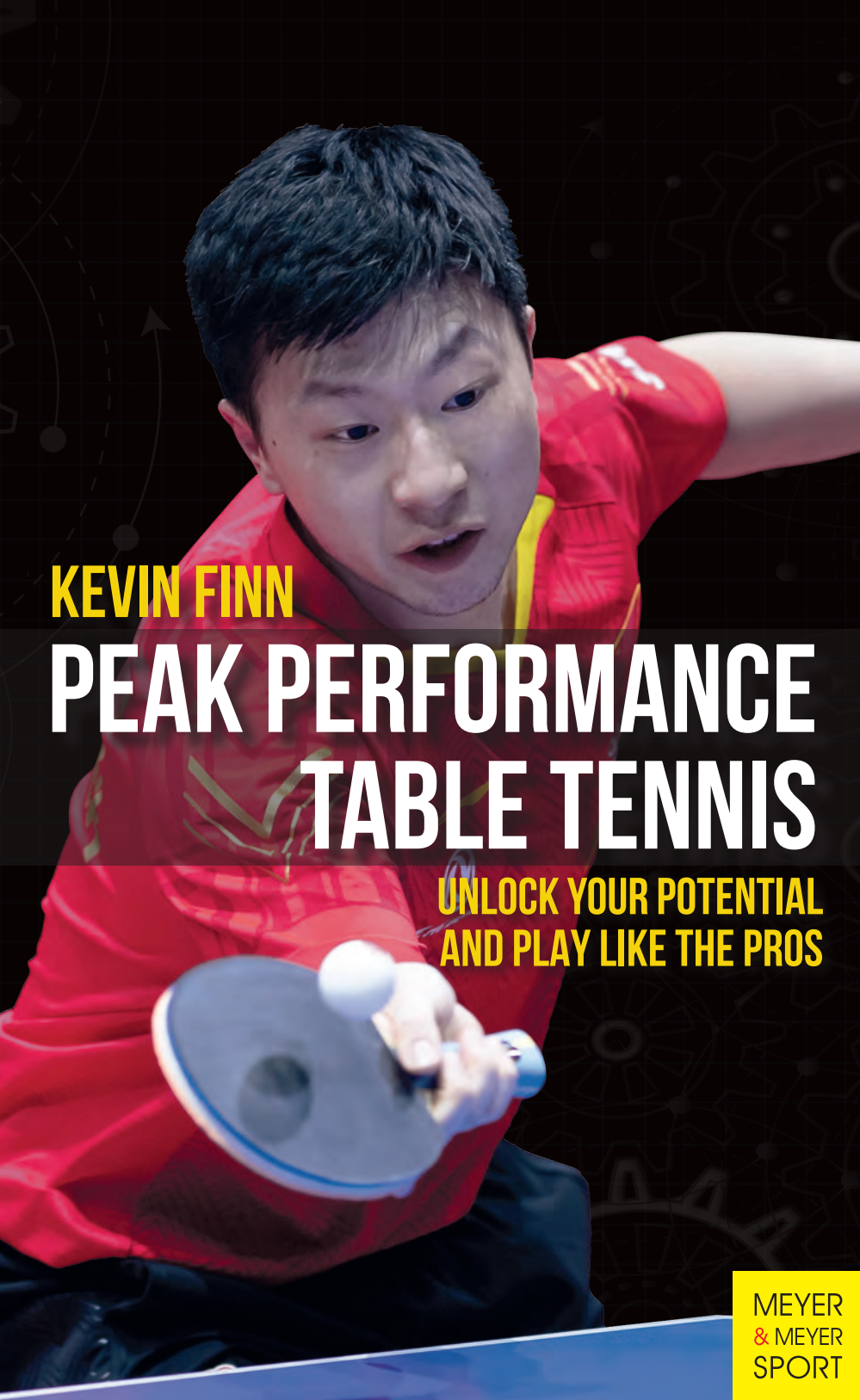

KEVIN FINN

PEAK PERFORMANCE TABLE TENNIS

UNLOCK YOUR POTENTIAL AND PLAY LIKE THE PROS

MEYER & MEYER SPORT

Peak Performance Table Tennis

To my beautiful wife

KEVIN FINN

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CONTENTS

A NEW ERA

"The balls are bigger and you need to be much more fit—it takes a lot of power when you play. You cannot practice like before."

—Jan Ove Waldner on the plastic ball

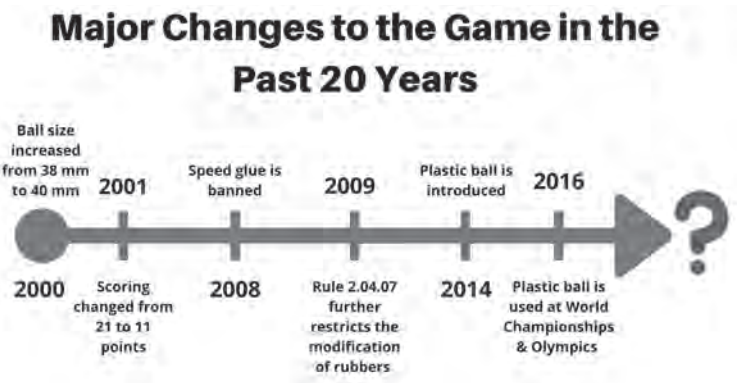
As a rule, table tennis players are not too fond of change. We love our sport. We love spin. We love speed. Pips players, such as myself, love the challenge of changing and manipulating the spin in a disruptive way. We spend inordinate amounts of time obsessing over our equipment until we get things just right. . . and then, the ITTF comes along and throws a wrench in things with a major change to the rules.

I've spent over ten years frequenting the most popular online table tennis forums, and I can confidently report to you these changes are usually met with horror, shock, doom, and gloom. To many of us, it feels like rather than attempting to enlighten the public on the intricacies of table tennis through better education, coverage, and analysis that the ITTF chooses to "dumb down" the sport by making it slower and less spinny—the very things that make our sport so unique! Still, we begrudgingly accept the changes, and once the dust settles, we adapt and press onwards. But there is a clear pattern at play here.

Over the past 20 years, nearly all the major changes implemented by the ITTF can be explained by two driving forces:

1. The desire to make the sport more spectator-friendly to boost viewership and worldwide appeal.

2. The desire to increase the safety of our sport by reducing exposure to volatile organic compounds and ending the mass production of celluloid (which is highly flammable).



Interestingly, regardless of the rationale, each change ends up reducing both the speed *and* spin athletes can impart on the ball. The latest switch to plastic balls exemplifies this perfectly. It was done out of safety concerns but included a sneaky change to the size of the ball as well, making it slightly larger on average. Unsurprisingly, both anecdotal reports from players and scientific research show the new plastic balls have less speed and spin compared with celluloid balls. [1]

With no speed glue or boosting allowed, attempting to compensate for the loss in spin and speed with faster and faster equipment is, at best, a Band-Aid solution—and with some of the newest generation of rubbers costing nearly $100 apiece, it's an expensive one at that. This leaves us with one viable option: upgrade the *player*.

In the research phase of this book, I read dozens of studies about the physical and nutritional demands of table tennis. In these studies, when coaches and players were surveyed, one common thread was a decided lack of focus on both physical training [2] and nutrition and supplementation [3] when compared with skills training and tactics. This is the old paradigm. It's time for table tennis to advance and adopt a more integrated view of training that views physical, nutritional, psychological, social, and emotional skills as vital parts of the yearly plan.

The game has changed. Will you?

THE ORIGINS OF THIS BOOK

The amount of quality information available to table tennis players today is astounding. As a young adolescent, I remember searching fruitlessly for table tennis books at my local bookstore and library.

Every once in a while, I was lucky enough to find one, but that was a rare occurrence. Now, between books, blogs, magazines, and social media platforms, such as YouTube, the average player has easy access to a nearly endless supply of content right at their fingertips.

And yet, as I survey the landscape of table tennis-related content, I have not found a truly comprehensive look into the realms of physical training and nutrition. There are a few books floating around that appear to do so, but closer inspection reveals them to be nothing more than shoddy, "copy/paste" jobs where half the book contains generic recipes and the rest is recycled content used for a dozen different sports. Needless to say, I think the table tennis community deserves better!

I first noticed this need back in 2016, so I published a free, internet eBook titled *The Table Tennis Player's Guide to Health and Fitness*. My goal for the guide was to provide the typical club player with some evidence-based guidelines for improving their health and fitness without needing to quit their day job to make it happen. It outlined a "minimum effective dose" approach that I felt would be ideal for casual and amateur players. Thousands of downloads later, the same questions kept cropping up from my readers:

> *What if I'm not after the 'minimum,' but instead seek optimal? What's the next step? How can I more directly apply this information to improve my table tennis performance?*

I decided to answer those questions with a second edition, so I took a deep dive into the literature regarding sports psychology, motor learning, advanced periodization strategies, recovery protocols, injury prevention, and other novel ways to improve performance and

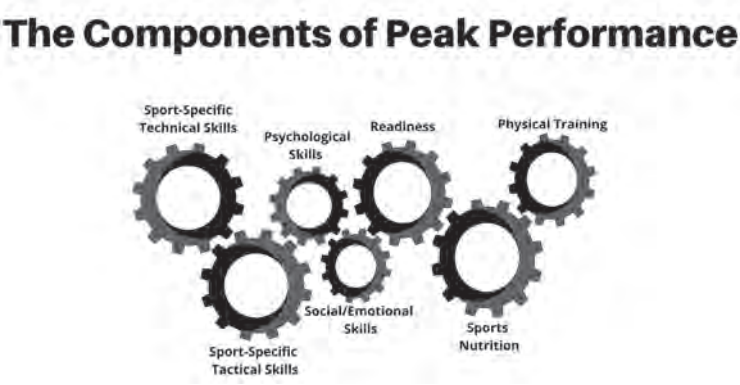
athleticism. I also read every study I could find that was performed directly on table tennis players. This whole process opened a can of worms that resulted in well over a year of research and over a hundred pages of notes, references, and ideas.

What started as a revision turned into a complete rewrite. I have kept the skeleton of certain sections of the eBook, but what you hold in your hands now is another beast entirely. This is a fully referenced book chocked full of the latest sports science aimed solely at improving your table tennis performance. It is both a toolkit and a blueprint for the advancement of your athletic development. Whether you're a coach, a professional, or just a passionate club player, this book will uncover paths to improvement you didn't know existed. The journey will not be an easy one, but worthwhile things rarely are.

WHAT IS PEAK PERFORMANCE?

I've titled this book, *Peak Performance Table Tennis*, but what does that mean exactly? What does it mean to achieve peak performance? Rest assured, I will be going into the exact details of this at great length in this book, but for now, a quick analogy will suffice: think of a Swiss watch. On its face, it appears quite simple. Three hands—two relatively motionless, while a third moves gracefully and reliably around the track. Peek inside, however, and the truth is revealed: behind the scenes, there is an intricate series of cogs functioning seamlessly in concert.

Likewise, an athlete who has achieved peak performance plays in a way that looks effortless on the surface, but hidden underneath is a vast network of machinery that has been carefully calibrated, oiled, and designed for one purpose—to win!



Let's briefly look at each component in turn:

- **Sport-specific technical skills:** Your ability to execute the strokes required with good form.
- **Sport-specific tactical skills:** The strategic decisions and actions you take to gain an advantage.
- **Psychological skills:** Your ability to focus and think clearly under pressure.
- **Social/emotional skills:** Your ability to maintain a confident and positive emotional state during play, and, more broadly, your ability to maintain and develop positive relationships with those around you and lead a balanced life.
- **Readiness:** The state of being physically, mentally, and emotionally recovered so you can bring your full abilities to bear.
- **Sports nutrition:** Dietary manipulations that ensure performance is fueled maximally and body composition stays optimal.
- **Physical training:** Supplemental training to make your body stronger, faster, more enduring, and more resilient.

In this book, I comprehensively cover these seven domains and provide actionable steps for you to take to ensure you are putting yourself in the best possible position to play your best when it

matters most. After all, in the end, it doesn't matter how good of a player you are on paper, it matters how good you are when it counts.

WHAT YOU WILL GET FROM THIS BOOK

Cutting edge sports science, curated specifically for table tennis athletes—a deep dive into sports nutrition, supplementation, training methodologies, holistic periodization, advanced recovery tactics, injury prevention, psychological and emotional skills training, motor learning, and more. I will shed light on the intangible elements that separate a good athlete from a great one.

WHAT YOU WON'T GET FROM THIS BOOK

This book is *not* designed to teach you the game of table tennis.

As a strength and conditioning specialist and speed and agility coach, I'm confident in putting out information on how to improve athletic performance. In the world of table tennis, however, I'm nothing more than a scrub, middle-of-the-pack player who happens to be passionate about promoting our sport. My areas of expertise are in teaching, coaching, researching, and experimenting. As an athlete, I'm nothing special!

So, there will be no discussion of how to perform basic strokes, the rules of the game, equipment, or in-depth analysis of top players. But let's be real; tactics aside, you're not going to learn how to play table tennis from reading a book. That's done best in person with an experienced coach.

For the sake of completeness, I do have a section touching on the technical and tactical sides of peak performance, but the purpose of those chapters is to show how those cogs fit into the rest of the machinery

rather than providing specific instructions regarding technique or tactics. It's a big picture view that focuses more on the *how* than the *what*.

HOW TO USE THIS BOOK

I did not design this book to be read front-to-back one time. In fact, I encourage you to skip around to the sections that interest you the most first. Think of this book more as a reference to be returned to many times, depending on the stage of your athletic development and your individual needs. As you read, I recommend jotting down notes, highlighting, underlining, and annotating as you go. There are dozens upon dozens of performance-enhancing strategies revealed in this book. To attempt to apply them all at once would be overwhelming. Instead, pick a handful of items and start making changes until they become second nature. You can slowly start incorporating other elements as time goes on. The key thing to avoid is trying to overhaul everything, becoming overwhelmed, and ending up doing nothing as a result. Some of these changes may seem trivial or insignificant when viewed in isolation, but taken together, they will have a dramatic impact.

"I'm not saying that if you eat good you will be 20% better, but maybe you will be 1% or 2% better, and maybe if you do some physical training you will be 3% or 5% better, or maybe if you improve your sleep you will get 1% better. I mean, it's not one part where you can say this is very important, if you do that you will be immediately 20% better. You have to think about many things." [4]

—Michael Maze on the importance of attending to tiny details (Lightly edited for clarity).

Dave Brailsford, the former performance director of British Cycling, calls this attention to detail the "aggregation of marginal gains." This

is the philosophy that tiny improvements in several areas will result in significant change. This book is essentially a collection of hundreds of tiny improvements that you can make to your training and lifestyle. You may never be able to compete with certain players based on raw talent alone, but if you're willing to put in the work—to attend to those tiny details that most overlook—you may just find yourself on the champion's podium. Hard work beats talent when talent doesn't work hard.

Are you ready to get to work?

GET AN EDGE OVER YOUR COMPETITION WITH PERSONALIZED ONLINE PERFORMANCE COACHING

The information found in this book is more than enough to get your feet wet, but the real magic happens when these principles are applied and expertly tailored to your exact needs by an experienced coach.

If you are a professional player or dedicated enthusiast who is determined to leave no stone unturned in your development as an athlete, apply today to join my team!

To apply to become a PPTT Athlete, use the QR Code below or go to https://peakperformancetabletennis.com/coaching

SECTION I

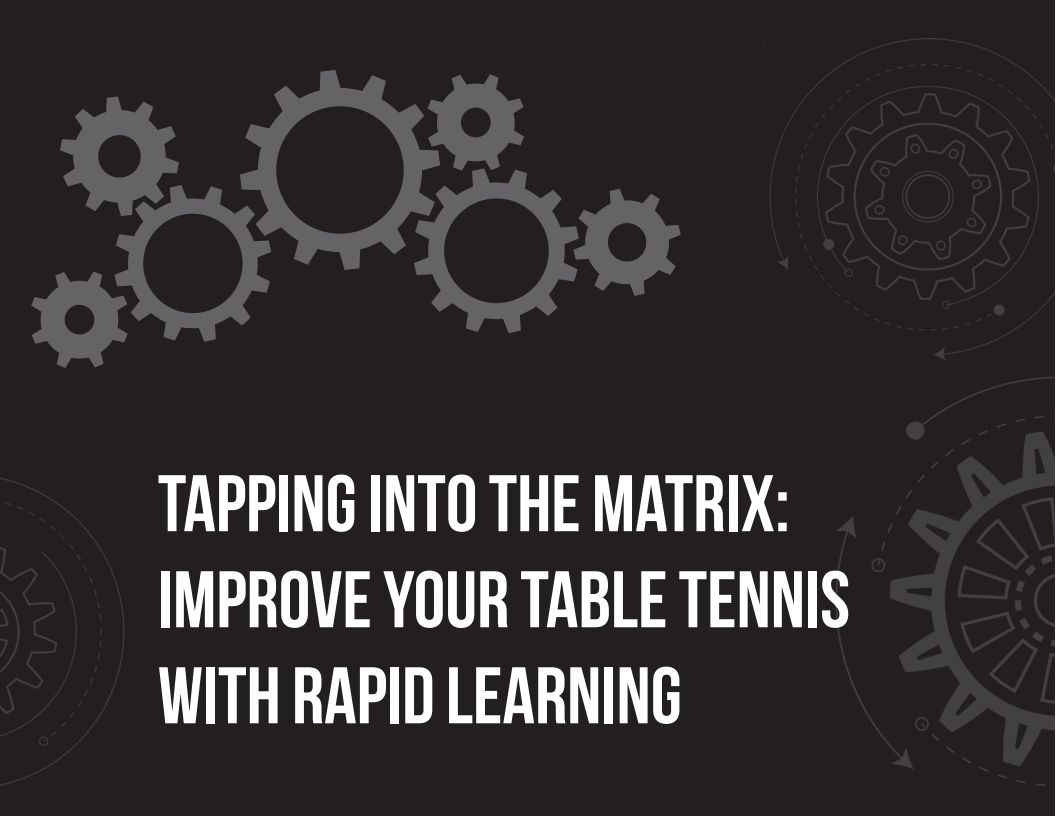
TECHNICAL AND TACTICAL SKILLS

SECTION OVERVIEW

In this section, we will cover the technical and tactical domains of peak performance. As I stated in the introduction, I'm not going to be focusing on teaching the specifics of correct form or diving into detailed tactical plays against various styles. Instead, I'll be focusing on the *how*:

- ➔ How can you arrange a practice session to best promote rapid learning?
- ➔ How do various coaching cues and methods impact learning?
- ➔ How can one begin to develop a personal strategy?
- ➔ How are tactics developed and honed?

First up, we have a chapter on rapid learning techniques to help improve your technical skills through more efficient practice. After that, a chapter on tactical skills introduces the "Vitruvian Man" exercise as well as my philosophy regarding tactics.



TAPPING INTO THE MATRIX: IMPROVE YOUR TABLE TENNIS WITH RAPID LEARNING

"Be stubborn about your goals and flexible about your methods."

—Unknown

Remember that scene from *The Matrix* where Neo is hooked up to a computer and they upload black-belt level mastery of dozens of martial arts disciplines directly into his brain? In minutes, he was able to learn what would have taken many lifetimes to learn in the real world. Imagine if you could do the same for table tennis...

Jan-Ove Waldner's ball control and artistry, Ryu Seung-min's footwork, Wang Liqin's raw power, Xu Xin's spin. . . I suppose you'd

end up with a player who looks a lot like Ma Long. Perhaps that's how he's been so dominant? Someone check the footage to see if he has those Matrix-style "port holes" in the back of his head!

On a more serious note, ever since I saw that scene from *The Matrix*, I've always been fascinated with the concept of learning. Is it actually possible to "hack" the learning process? How do different methods of practice impact learning? In search of answers, I took a deep dive into the literature regarding motor learning and how it relates to optimizing sports performance. This chapter is a distillation of the most relevant and useful learning tactics I came come across—most of which can be neatly dropped right into your existing practice schedule. To set your expectations accurately, don't expect anything revolutionary. This isn't science fiction, and unlike *The Matrix*, there are no quick fixes that can substitute for good, old-fashioned hard work.

Instead, I will provide some suggestions to help you better utilize the time you *already have* so you can eke out a little more progress. I have intentionally chosen some strategies that seem relatively novel and counterintuitive because, in doing so, I hope to offer you some untrodden paths you may have never considered. Don't feel like you need to try to implement everything from this chapter all at once; instead, pick a strategy or two and simply give them a try. If you notice a positive difference, great! If not, try another or simply go back to what you were doing.

FUN FACT:

Hugo Calderano, the first player from Latin America to reach the Top 10 of the ITTF World Rankings, likes to use a Rubik's Cube to train himself to both think and *move* quickly at the same time. He can solve it in under 20 seconds!

WHAT DOES THE RESEARCH SAY REGARDING MOTOR LEARNING?

Motor learning is the process of acquiring and mastering simple and complex movement patterns through practice or experience. Although the data regarding motor learning is somewhat messy, I've done my best to make recommendations based on where I felt the weight of the evidence lies. I came across one integrative review by Nicholas Soderstrom and Robert Bjork titled "Learning Versus Performance: An Integrative Review" [1] that I found particularly enlightening and will be drawing from heavily in this chapter. It matches both my own reading of the literature as well as my personal experience teaching and coaching individuals over the past 10 years. Before diving into the review, we should first examine the terms *performance* and *learning* in the way they define them:

PERFORMANCE

"*The temporary fluctuations in behavior or knowledge that can be observed and measured during or immediately after the acquisition process.*"

In other words, how well can you execute the task *right now*?

Example:
After practicing your forehand push in a given session, you are able to execute the movement consistently and with good form at the session's end. That reflects good performance.

LEARNING

"The relatively permanent changes in behavior or knowledge that support long-term retention and transfer."

Example:
How well can you perform that same forehand push a couple of days later? The extent to which you can reproduce your previous performance reflects your learning.

The reason this distinction matters is that there is a counterintuitive relationship between these two terms, as Soderstrom and Bjork describe here:

> *The distinction between learning and performance is crucial because there now exists overwhelming empirical evidence showing that considerable learning can occur in the absence of any performance gains and, conversely, that substantial changes in performance often fail to translate into corresponding changes in learning. Perhaps even more compelling, certain experimental manipulations have been shown to confer opposite effects on learning and performance, such that the conditions that produce the most error during acquisition are often the very conditions that produce the most learning.*

This means the practice protocol that produces the most substantial gains in performance within a session may not necessarily translate into the best performance gains *long term*. This distinction is useful on two fronts.

First, knowing this fact should bolster your resolve during a training session where many errors are being made. In this situation, it's easy to feel like you're not improving or are even *regressing* due to your poor performance. The studies outlined in this review, however, demonstrate that learning can occur even in the absence of performance. This should be a rallying cry for you in the thick of training and allow you to maintain a level of enthusiasm and clear-headedness that you may not have had otherwise. Secondly, it also opens the door to alternative methods of training that you might have otherwise discounted due to a high number of initial errors. So, with this in mind, let's look at a few of the key concepts found within this review.

CONCEPT ONE: LATENT LEARNING, FATIGUE, AND OVERLEARNING

Imagine performing a basic drill where you're working on your forehand loop against a block. As mental and physical fatigue sets in and you begin to make more mistakes, does continuing the drill beyond that point only serve to reinforce those mistakes? Should you terminate the drill as soon as your performance begins to decline in order to maintain "perfect practice"? Not necessarily. Soderstrom and Bjork identify three interacting concepts that explain how you may still be benefiting from practicing a drill, even though performance has stagnated or declined:

> *The learning versus performance distinction can be traced back decades when researchers of latent learning, overlearning, and fatigue demonstrated that long-lasting learning could occur while training or acquisition performance provided no indication that learning was actually taking place.*

For example, Soderstrom and Bjork cite one study [2] where trainees from the Air Force performed a rotary pursuit task where they manually tracked a target with a wand. The researchers manipulated the rest intervals between trials in a way that caused some of the trials to be performed in a fatigued state. Unsurprisingly, the subjects' performance suffered on the individual trials performed while fatigued, but when they were retested (after fatigue had dissipated), their performance *improved despite the earlier decline*. So, learning can indeed occur even when short-term performance is masked by fatigue.

This doesn't mean fatigue has *no* consequences on learning, however. There is research that shows motor learning occurs at a slower rate when the task is performed in a fatigued state [2a]. Furthermore, the negative effects seem to persist even in subsequent sessions when fatigue has dissipated. Thus, you should take steps to minimize fatigue as much as possible when learning (the "distribution of practice" method outlined in the next section is good for this), but at the same time, don't lose hope and abandon training simply because you are making mistakes while learning. It's a balancing act!

Soderstrom and Bjork also identify *overlearning* as a critical part of improving long-term retention of a skill. As a musician, this is a concept with which I am intimately familiar. If you plan on performing a piece in front of a group of people, it is not enough to simply practice until you can perform it with no errors. To reliably perform it well, you must practice until you can perform the piece perfectly, many times in a row under a variety of conditions. This is overlearning. It's performing repetition after repetition even *after* mastery seems to have been achieved. This is the reason dedicating enough "table time" is so important to developing your skills as a table tennis player. You may be able to learn how to perform a forehand loop in relatively

short order, but how reliably will you be able to implement that stroke within the context of a competitive match?

Learning isn't enough, you must *overlearn* your strokes if you want to be truly consistent.

THE LESSON

I'm probably not alone in feeling frustrated when I make a large number of errors during a drill or practice session. The poor performance causes a feeling of wasted potential—like I'm not benefiting from the time spent training. Consequently, this can cause a loss of focus and drive, ultimately reducing the quality of the session. I also tend to brush off strokes that feel too easy (pushes, I'm looking at you), when perhaps a bit of overlearning is precisely what is needed to increase my consistency of these basic strokes during tight matches.

Being aware of the concepts of latent learning, fatigue, and overlearning can be a useful way to shift your mindset. Remember, if you are making a large number of errors and performance seems to be declining or simply stagnating in a given session, you are still "planting the seeds" of long-term learning deep below the surface. Improvements are being made. Don't give up! It's perhaps a tad cliché to say "learn from your mistakes," but the research indicates that we indeed do just that!

CONCEPT TWO: DISTRIBUTION OF PRACTICE—MAKING YOUR STROKES "STICKY"

Now that we've established that learning and performance do not always directly correlate, let's explore some ways in which that may

impact your training. Suppose you have 30 minutes to perform drills with your partner and you have three strokes you'd like to work on—a backhand counter, a forehand push, and a forehand loop. Which approach would you suspect to be superior?

- ➔ 10 minutes devoted to each stroke before moving on to the next one.
- ➔ 5 minutes devoted to each stroke before moving on (allowing each stroke to be revisited one additional time).

The first option, typically referred to in the literature as "blocked" or "massed" practice, allows you to really dig in and learn each stroke in depth. Research shows this would likely result in better performance of each stroke by the end of that session. The latter, "distributed practice" option, however, would likely result in better long-term retention of the strokes.

Think of the difference between cramming for a test the night before (only to forget everything immediately after taking the test), and distributing that same amount of studying over a period of days. Most would clearly recognize the second option as the superior choice for long-term learning, but we don't typically carry this concept over to individual sessions. The authors of this review point to research by Shea and Morgan, [3] which shows that the "interleaving" approach to distributing practice seems to promote long-term retention of skills. They also found that participants who had practiced the skills in a more random fashion rather than in a completely fixed manner were better able to execute *new* response patterns, allowing the athlete to utilize that skill more effectively under a wider variety of contexts.

The benefits of a distributed practice schedule are particularly apparent when attempting to master complex motor skills. [4] Since

many of the strokes performed in table tennis are complex in nature, the table tennis player should strongly consider utilizing a distributed practice schedule when training. This is supported by at least one study [5] where researchers studied table tennis players and found a distributed practice schedule resulted in better performance in topspin forehands compared to a massed practice schedule.

This is not to say that one should *always* default to distributed practice when training. If a player has not had enough of an opportunity to grasp the fundamentals of a stroke, jumping right into a highly distributed practice schedule may be too overwhelming. In a 2012 study, [6] Asif Ali and colleagues point out that practice schedules that cause high levels of contextual interference (as distributed practice does) may present too great a challenge for learners, and they cite several studies that support this notion. Thus, it may be best to follow a massed practice schedule when first learning a brand-new stroke and then to hone that skill through distributed practice. There's both an art and a science here, so you may need to experiment a little to find the balance best for you.

THE LESSON

Ever practice a stroke during training and seem to have it down pat, only to find you're back to square one once you try to implement it in a game? I know I have! To help make your strokes more "sticky," try distributing your practice on two fronts:

➔ *Within* sessions: Use the "interleaving" approach described in the beginning of this section to allow each skill to be revisited additional times within a single session.
- So rather than devoting three 10-minute blocks for three separate skills, try six 5-minute blocks.

➔ *Between* sessions: Up the frequency of your training when possible, even if the total time spent training per week remains the same.
  - Rather than devoting 8 hours per week spread over two sessions, try four sessions at 2 hours each.
  - Consider "two-a-days" to further break down your training. So, rather than training for 3 hours in the evening, perform a 1.5-hour morning session and a 1.5-hour evening session.

Seo Hyo-won, the 2013 winner of the Korean Open is a prime example of the latter method of distributing practice, as she reportedly splits her training into four daily sessions: "I work out for an hour at sunrise, 2 hours in the morning, 2 and a half hours in the afternoon, and another hour at nighttime. Altogether about 6.5 hours each day." [7]

Remember, this style of training may result in a greater total number of errors made on a session-to-session basis, but will ultimately lead to better retention of the skills practiced. Soderstrom and Bjork point to the "reloading hypothesis" to explain why this occurs:

> *Distributed practice encourages learners to reload or reproduce the to-be-learned motor skills during acquisition, which is a potent learning event, despite appearing not to be during acquisition. . . the spacing inserted between practice sessions results in a temporary loss of access to the relevant motor commands. The effortful processing required to reload the commands during distributed practice appears to facilitate learning but impede short-term performance, compared with blocked (massed) practice in which skills are performed over and over again.*