

[FREE EBOOK CHAPTER]
THE SPORT-SPECIFIC TRAP -
REVISITING DYNAMIC
CORRESPONDENCE FOR
COMBAT SPORTS

BY GEOFFREY CHIU

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About The Author

I'm **Geoffrey Chiu**, owner of **GC Performance Training**. I'm a life-long martial artist and dedicated strength & conditioning coach based out of Vancouver, Canada and London, UK.

I've worked with amateur and professional athletes in boxing, kickboxing, muay thai and brazilian jiu-jitsu. I am constantly learning from world-class coaches in both the combat sports and S&C industries so that I can bridge the gap between skill and athletic development, using pragmatic training methods to further elevate the current landscape and paradigms of combat sports.

I write for my [own blog](#) and other professional athletic development websites about topics such as strength & conditioning, periodization and planning, as well as skill acquisition. My goal is share information and create content to help both coaches and athletes think more critically about human performance.



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“The Strength & Conditioning Handbook For Combat Sports”

will cover various solutions to challenges commonly seen in physical development for combat sports. Topics discussed include:

- ✓ **Baseline and integrated testing for combat sport athletes.**
- ✓ **Using a needs-analysis and movement-analysis to dissect the demands of different combat sports.**
- ✓ **How to plan better training microcycles by using a bottoms-up approach to programming.**
- ✓ **The essentials of recovery outside of the practice and weight room to boost performance.**
- ✓ **Mitigating and managing common injuries in combat sport athletes.**

... and more!



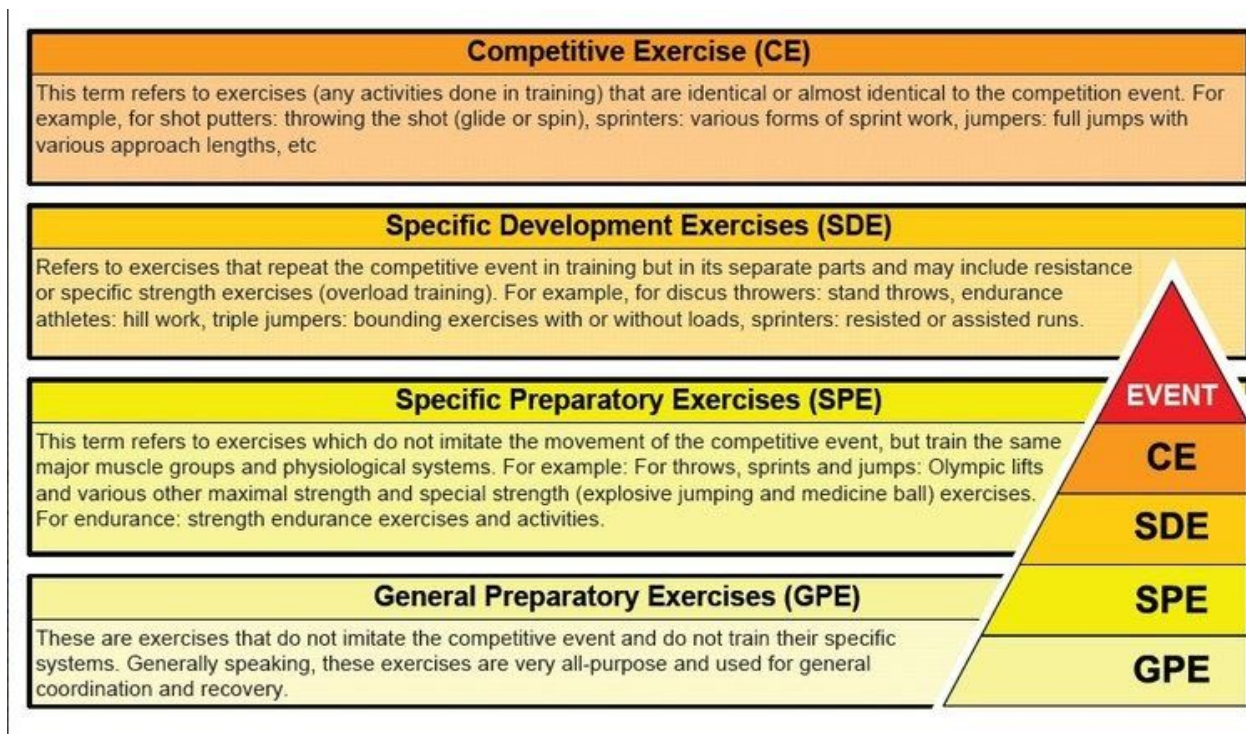
For now, let's dive into this chapter. Chapter 7 of the eBook, “The Sport-Specific Trap - Revisiting Dynamic Correspondence for Combat Sports” talks about key concepts to consider when selecting exercises to enhance combat sports performance and some common mistakes coaches make.

The Sport-Specific Trap - Revisiting Dynamic Correspondence for Combat Sports

Dynamic correspondence is a term first used by Soviet coach and researcher Dr Yuri Verkoshansky, describing it as the ability for exercises and training programs to directly transfer to athletic performance. The main criteria Dr Verkoshansky used to ensure the carryover from specialized exercises to sporting performance is that the exercise stimulus should mimic similar muscular contraction types and ranges of motion seen in the competitive movements.

Similarly, Soviet hammer throw coach Anatoliy Bondarchuk also created a classification system in hopes to improve the carryover of training to competition. His classifications were also based on the movement pattern, muscle groups, and external load between exercises and the competition movements.

Many S&C coaches will have seen or had some experiencing utilizing the pyramid below:



Source: Bondarchuk's Exercise-Classification Pyramid

In combat sports S&C, there is a lot of room for misinterpretation when it comes to dynamic correspondence, fueled by a misunderstanding of combat sports and the role of the S&C coach itself.

The sport-specific trap refers to when coaches become too fixated with using exercises that mimic the movements of the sport, often directly loading these movements in hopes of achieving training specificity. Punching with dumbbells, endless amounts of landmine punches and band-resisted double-leg drills, these exercises are frequently prescribed with complete neglect on how the sport-specific movements are developing inside the practice room in the first place. Most significant improvements in punching ability will come from refining punching technique with a striking coach and takedown technique by drilling takedowns in the practice room.

So why are S&C coaches taking athletes into the weight room to perform the same exercises they would be doing in the practice room, but with a diminished quality of training and a disregard for skill development and specificity? If these specialized exercises are to be done, S&C coaches must show some form of competence with the combat sport skills.

Even though the concept of dynamic correspondence and Bondarchuk's exercise classification pyramid can be applied to various sports, they are most suitable for sports like track and field disciplines where the range of competitive movements are narrow (run or throw or jump) and are more clearly defined. When considering the high degree of movement variability of combat sports, the decision on which exact competitive movements to improve with SDEs can be ambiguous. I mention the examples of punching power and takedown ability because they seem to be the low hanging fruit for coaches that are looking to enter the combat sports industry or make a name for themselves as a sport-specific performance coach. Hopefully, by the end of this ebook, you think of combat sports S&C in more comprehensively.

So what are the solutions? Concerning exercise selection and dynamic correspondence, I have 3 principles of practice.

1. S&C training should focus on **inducing systemic neurological changes** in strength and power
2. S&C training should focus on **developing specific physical components** that make up overall performance
3. Use special developmental exercises (SDEs), but carefully execute them to make sure they're **in line with the skill acquisition and development concepts seen in the sport.**

Inducing Systemic Changes

As movement variability increases, we see more benefits from improving global (general) strength and power. For instance, improving lower body strength through the basic squat and hinge patterns transfers over to a multitude of sport-specific movements - kicking ability, takedown defence, guard-passing, etc, through second-order effects¹. Second-order effects refer to the long-term consequences of any action, they can be referred to as indirect as the cause-and-effect relationship cannot be immediately made.

For example, loaded trapbar deadlifts may not completely mimic the movements seen in sport, but performing them consistently in a training program benefits the athlete by improving overall lower body work capacity on and off the mats, mitigates injury risk in the hips and lower back, as well as builds a base on which split-stance, ballistic, plyometric and potentiated exercises can improve on.

The problem with heavily investing physically² and psychologically³ into SDEs is that it often fails to induce systemic neurological changes that will improve global strength, power and work capacity nor are they capable of developing localized muscular, joint and ligament robustness due to their lack of loading. When selecting exercise for a training program with both general and specific elements, consider the amount of movement variability seen in the sport and which competitive movements are worth investing in. SDEs have a carryover to a smaller pool of movement variations and must be treated as such.

Training Components That Make Up Performance

Training specificity can be achieved even before utilizing SDEs. The idea is to improve separate key components of athletic performance, sometimes referred to as performance indicators⁴, that summate to increased overall performance within any given movement skill set. This involves reverse-engineering the demands of the sport (see “Dissecting the Combat Sports” chapter) and targeting specific areas that will improve performance in that given sport.

In the realm of grappling, performance indicators include:

- Grinding ability - moving or resisting an external load through eccentric, isometric and concentric muscle actions.

¹ Thanks to my friend and colleague William Wayland of Powering Through Performance for educating me on this term as it applies to strength and conditioning.

² Referring to available training time within a training session or program and available energetic resources for adequate recovery.

³ Referring to the false sense of confidence coaches build by relying too heavily on these exercises to improve performance in the ways we want or expect them to.

⁴ Performance indicators are measures, whether it be specific exercises, or attributes like maximum strength or reactive strength that correlates the sport performance within any given sport or athlete.

- Upper body pulling power - the rate of force development in horizontal and vertical pulling movements.
- Grip isometric strength.
- General lower body strength and power - ability to produce high amounts of force quickly with squatting, lunging and hinging movement patterns.
- Lactic/Anaerobic Capacity and Power - the ability to maintain outputs in highly-lactic conditions.

Exercises aimed to improve grappling performance will be selected based on these criteria. Full body compound lifts like Zercher squats, barbell pressing movements and Romanian deadlifts to improve general grinding ability, lower body strength and power. Seal rows and towel pull-ups to develop upper body pulling power and grip strength.

The components that make up striking performance include:

- Ballistic and plyometric ability - ability to throw high-velocity strikes and utilize the stretch-shortening cycle (SSC).
- Double-peak muscle contraction ability.⁵
- Agility - change of direction ability paired with decision-making skills in reaction to external stimuli.
- Alactic power endurance - ability to repeat high-intensity, high-velocity efforts.

By improving these aspects through general rotational ballistic exercises, core-stiffening exercises, and intrinsic foot muscle strengthening/plyometric hops, we can enhance a fighter's striking ability without needing to utilize SDEs that mimic striking movements.

Special Developmental Exercises (SDEs)

I consider specialized exercises as “pursuing the upsides” of the aforementioned barbell strategy, exercises that should be invested in once the basics and the minimums are covered. Throughout the article, I have sounded like a proponent against the use of SDEs all together, but please don't get me wrong, I am all for experimentation and the exploration of movement. However, some important variables must be considered when designing specialized exercises.

⁵ The evidence for a double-peak muscle contraction in combat athletes, specifically striking, was shown by Dr. Stuart McGill in 2010. When an experienced athlete throws a strike, there is a muscle contraction-relaxation-contraction pattern. The initial contraction of the working muscles accelerates the fist or leg at the target, then there is a moment of relaxation before the muscles contract again, stiffening up upon impact. This stiffening is thought to result in a “higher effective [bodyweight] mass behind the strike and likely a higher strike force” (McGill et al., 2010).

Here is a checklist of questions to consider when implementing SDEs:

- Does adding load to the exercise change the way the movement is performed?
- Is the load being applied in the same plane of motion as the movement itself? Does it need to be?
- How much load is enough load?
- What other variables can you use to overload specialized movements other than adding load?
- How familiar are you as an S&C coach with the sport-specific movement? In other words, do you even know how to throw a proper jab or cross? Do we even know how finer techniques of a single-leg takedown? Taking these factors into account, how confident are you in bridging the gap between physical performance and skill development?

I'll provide 4 different examples of SDE variations for punching ability and power, reviewing the most important concepts for each.⁶

First off, punching performance is made up of 4 main variables:

- Ground reaction force from the lower limbs.
- Torso/core rotational ability.
- Velocity of the striking limb.
- Effective body mass and stiffness upon impact.

SDEs prescribed to enhance punching power must address one of these 4 variables.

Nuances When Performing Landmine Punches

The landmine punch is perhaps one of the most commonly prescribed exercises by coaches attempting to improve punching power in their athletes. If you're going to do them, do them properly. [Here is a video of kickboxer/Muay Thai fighter Brad West performing the rotational row into landmine "punch" during our preparation for one of his fights back in 2019.](#)

The two details I look for when my athletes perform this exercise is whether there is **proper kinetic chain linking** and the presence of a **double-peak contraction** (contract-relax-contract) within the execution, two patterns of movements also seen in the skill of punching and striking.

⁶ I realize that I said punching ability is developed by addressing punching technique but I've done my fair share of punching, have studied boxing and have worked with boxing coaches for several years now. I'm confident I can bridge the gap and take some of that knowledge into consideration when designing these SDEs. There is always more to learn though so I keep an open mind!

Kinetic chain linking refers to the coordination of muscles and joints to produce force within a given movement. In this context, I'm looking for the energy transfer from the back foot, to the core musculature, to the fist of the punching hand as well as a shifting of the athlete's body weight from the back to the front foot. Lastly, I'm looking for a contract-relax-contract pattern in the execution of each rep. Pay attention to the acceleration of the barbell mid-lift and the core/body-stiffness achieved at the end of each repetition by Brad. What separates a push from a punch is the stiffening of the core and body upon impact. Re-evaluate the way you and your athletes perform this exercise - are you pushing or are you punching?

Half-Kneeling Slam Ball Punch

When it comes to punching power and speed, multiple studies^{7,8,9} studying experienced boxers have shown evidence that lower body strength and power are highly correlated with more powerful punching. The more force your lower limbs can produce, or the faster you can produce it, the more kinetic energy that can be transferred to the rotating torso and the striking limb (see kinetic chain).

Exercises like trapbar deadlifts, split squats and plyometric jumps make up a large part of my programs, but past a certain point, athletes also experience diminishing returns when chasing lower leg strength and power in the context of improving punching or striking power.

[The half-kneeling slam ball punch](#) is an exercise that emphasizes torso rotational ability and velocity of the arm/fist by eliminating the contributions from the back leg and foot as well as adding overload to the movement. Here are some key points to look for in this exercise:

- The slam ball¹⁰ must be light enough to not drastically change punching technique and heavy enough to provide a bit of resistance overload (for most of my 155-185lb combat sport athletes, somewhere between 3-8lbs/2-4kgs).
- The athlete accelerates the ball with intent throughout the movement - I like using external cues like "break the wall".
- The athlete rotates his opposite side shoulder in a "pulling" motion to get maximum rotational torque.

⁷ Loturco, I., Nakamura, F., Artioli, G., Kobal, R., Kitamura, K., & Cal Abad, C. et al. (2016). Strength and Power Qualities Are Highly Associated With Punching Impact in Elite Amateur Boxers. *Journal Of Strength And Conditioning Research*, 30(1), 109-116. <https://doi.org/10.1519/jsc.0000000000001075>

⁸ Dunn, E., Humberstone, C., Franchini, E., Iredale, K., & Blazeovich, A. (2020). Relationships Between Punch Impact Force and Upper- and Lower-Body Muscular Strength and Power in Highly Trained Amateur Boxers. *Journal Of Strength And Conditioning Research*, 1. <https://doi.org/10.1519/jsc.00000000000003585>

⁹ Lenetsky, S., Harris, N., & Brughelli, M. (2013). Assessment and Contributors of Punching Forces in Combat Sports Athletes. *Strength And Conditioning Journal*, 35(2), 1-7. <https://doi.org/10.1519/ssc.0b013e31828b6c12>

¹⁰ I specifically use a slam ball (a soft variation of a medicine ball) so that the ball doesn't bounce back. With nearly every athlete I've ever worked with, intent to maximally accelerate the ball decreases when the athlete is too worried about the ball bouncing in the wrong direction or trying to catch it when it returns.

- The athlete stiffens up at the end of their punch.
- The athlete maintains a stable and strong half-kneeling position. While we are trying to take away contributions from the leg, we still need stable hips to rotate our core and torso with maximum intent.

Plyometric Punching Drills

These next 2 exercises are designed to introduce a plyometric element to loaded and unloaded punching drills. The objective is to overload the rear leg by hopping off a box before initiating a punch, emphasizing horizontal propulsion of the body. In contrast to the previous half-kneeling slam ball punch exercise, we are now trying to improve the “ground reaction forces” aspect of punching performance.

[Plyometric Jab Drill¹¹](#)

[Plyometric Step-Drop Slam Ball Punch](#)

When applying these to striking-based athletes, the horizontal force production characteristics, from a specificity standpoint, would be more suitable for MMA and karate athletes compared to Muay Thai and kickboxing due to the wider stance and heavier reliance on in-ring/in-cage movement.

Oscillatory and Isometric Exercise for Striking Speed

Traditional plyometrics like depth jumps and plyometric medicine ball slams/tosses are great for incorporating the stretch reflex into power development, but when it comes to improving successive striking speed - throwing multiple strikes in quick succession, the physical demands of the body are more oscillatory. This has led me to prescribe exercises for my combat athletes to fill in the weak links that traditional plyometrics do not address.

[Here is a video of professional K1 kickboxer Arnold Acuru performing a rotational medicine ball exercise](#) to improve the contraction and relaxation speed of the shoulders, obliques and hips - muscle groups specific to punching performance. An overcoming-isometric protocol is also included in the exercise - a 3-second isometric contraction used to potentiate and build tension before the oscillatory repetitions. This exercise can also be performed with a resistance band, but it must be set up in a way that mimics the direction of rotational force and doesn't impede the execution of the movement pattern.

Arnold as a kickboxing athlete has no troubles expressing power concentrically, he is one of the most explosive athletes I've worked with, but repeated explosive movements in a contract-relax-contract manner (plyometrics, consecutive punching) has been a relative weakness. The ability to decelerate after a fast eccentric action is what we've been working to develop and this exercise develops that within range of motion seen in punching performance.

¹¹ This is an exercise I took from Tony Ricci of Fight Shape, strength & conditioning coach to elite level MMA athletes, working with the likes of Chris Weidman, Aljamain Sterling and Kaitlyn Chookagian among others.

The same concepts can be applied to kicks. [Here is a video of elite Muay Thai fighter Sam-A Gaiyanhadao showing incredible plyometric and oscillatory ability, performing 30 kicks within 15 seconds.](#) While technical ability plays a major role in this, I still believe the physical components can still be improved to some degree in all striking athletes.

My philosophy behind the use of SDEs is that once a coach understands how punching technique (or any skill in combat sports for that matter) is developed and in what context these exercises can be applied, they can start to experiment with breaking down the skill, refining and overloading the separate parts to enhance overall performance. With that said, there is still a great training effect to be gained performing many basic compound lifts and traditional ballistics/plyometrics that may not be immediately obvious (see second-order effects, barbell strategy chapter). Driving performance improvements through exercise selection will take patience, attention to detail, experimentation and revisions

Thank you so much for downloading and reading this free chapter!

I can't wait to share what I have in store for you in the full ebook.

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“With this manual Geoffrey has pooled a mix of contemporary science, pragmatism and old school knowledge. This is a great resource for coaches and combat athletes to glean actionable information that will make a real impact on athletes and coach understanding of what constitutes proper S&C for combat athletes.” – **William Wayland, Combat Sports S&C Coach to Boxers, Grapplers and UFC Fighters**

“If you are a novice coach wanting to work with combat athletes, a martial arts head coach or an experienced S&C coach, this handbook is a brilliant resource that offers genuine value for money” – **Daniel Iacofano, Combat Sports S&C Coach to Professional UK Champion Boxers & Olympic Level Grapplers**

“This ebook is a great starting point for skills coaches, S&C coaches and athletes looking to make sense of a clouded industry” – **Chris Miah, Professional CageWarriors & BAMMA MMA fighter, S&C Coach.**

“I think Geoffrey has done a really good job of collecting relevant information and breaking it down! Geoffrey lays down the blueprint of actual applicable information for both a coach and a fighter!” – **Andrew Hardwick, BJJ Competitor, S&C Coach**

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