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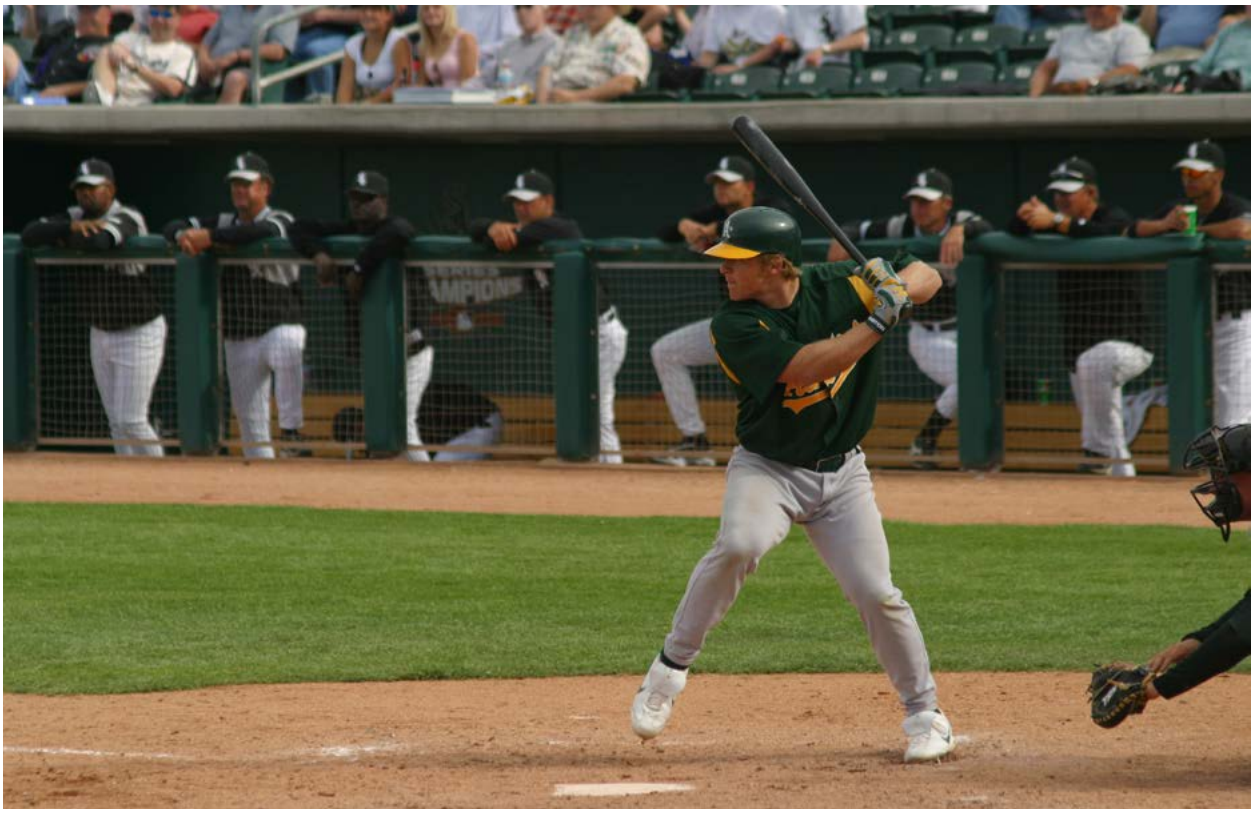
A Theoretical CrossFit Model for Professional Baseball Players

Former Oakland A's outfielder Danny Putnam creates a CrossFit training plan to keep ball players in top shape all year long.

By Danny Putnam **June 2015**



Courtesy of Christie Putnam

"Baseball is 90 percent mental, and the other half is physical." —Yogi Berra.

Baseball players have long held onto the idea that the mental aspect of the game is what sets the elite apart. Mastering the mental game has always been presented as a sort of Holy Grail for players—the difference between long-term success or a quick decline into obscurity.

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However, a new element is affecting baseball culture and the rest of the professional sports world: fitness. While that might seem odd considering the physical nature of most sports, note that some players get by only on great skill and sport-specific training but actually have glaring fitness deficiencies. Some less-than-fit athletes certainly perform at a very high level, but could they be better if they were fitter? Could injuries be avoided, careers lengthened and performance improved if fitness was a greater part of baseball culture?

CrossFit has been a driving force in challenging existing training practices in general, and its influence comes at a time when baseball players are finally starting to pay attention to Yogi's "other half."

The purpose of this article is not to lay the foundation for why baseball players or other athletes need to incorporate CrossFit methodology and programming into their training cycles. Volumes have already been written about the benefits of general physical preparedness and improving the 10 physical skills—cardiovascular/respiratory endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance and accuracy. We know the 10 physical skills are universally beneficial to athletes, and at this point we should be able to agree that improving these skills would help any athlete in his or her sport. Instead, this article is about how CrossFit methodology can be applied to create a successful fitness program for baseball players.

In addition, it should be made clear that this programming methodology is not attempting to turn professional baseball players into CrossFit Games athletes or even competitive CrossFit athletes. Nor is it meant to replace a player's sport-specific skill work. CrossFit is not a substitute for time spent working on swing mechanics, fielding and so on.

This model is designed to allow a baseball player to more fully express his skills on a consistent, prolonged basis. In other words, a player's natural baseball skills will be enhanced with more strength, power, flexibility, stamina, balance, endurance and so on. Through this program, players will be able to maintain and employ those skills at a higher level longer into the season and ultimately later into a career. Players have always been evaluated on their consistency and longevity, and the fitness created by this theoretical model will provide athletes with a key tool for developing these attributes.

How does CrossFit programming work for a professional baseball player? The theoretical model outlines a year-long periodization schedule that reflects the demands and challenges unique to a professional player. This is CrossFit applied very deliberately to a sport, and the model accounts for the specific demands of that sport. It provides the structure to improve fitness in the offseason and maintain fitness throughout the grind of the season.

CrossFit is not a substitute for time spent working on swing mechanics, fielding and so on. This model is designed to allow a baseball player to more fully express his skills.

The model is designed to affect three key metrics: injury resistance (fewer games missed due to injury), overall statistical production and increased productivity in the critical August-September period. The model also sets the pattern for fitness improvements year after year, creating the foundation for a lengthy and successful career.

The Grind of the Season

The professional season is best understood as a marathon as opposed to a sprint. A Major League campaign spans a six-month period and includes 162 games, with another month spent in spring training and another month on the field in October if a team goes deep into the postseason. During the season, teams will have frequent stretches with 10 or more games in a row and zero rest days. There are 12-hour bus rides, cross-country flights, extra-innings games, limited nutrition options (primarily an issue in the minor leagues)—and yet baseball players are expected to maintain top performance all season.

The physical and mental toll is usually apparent in the diminishing performances of players in the months of August and September, aka the dog days of summer. This is typically when players break down, either outright with

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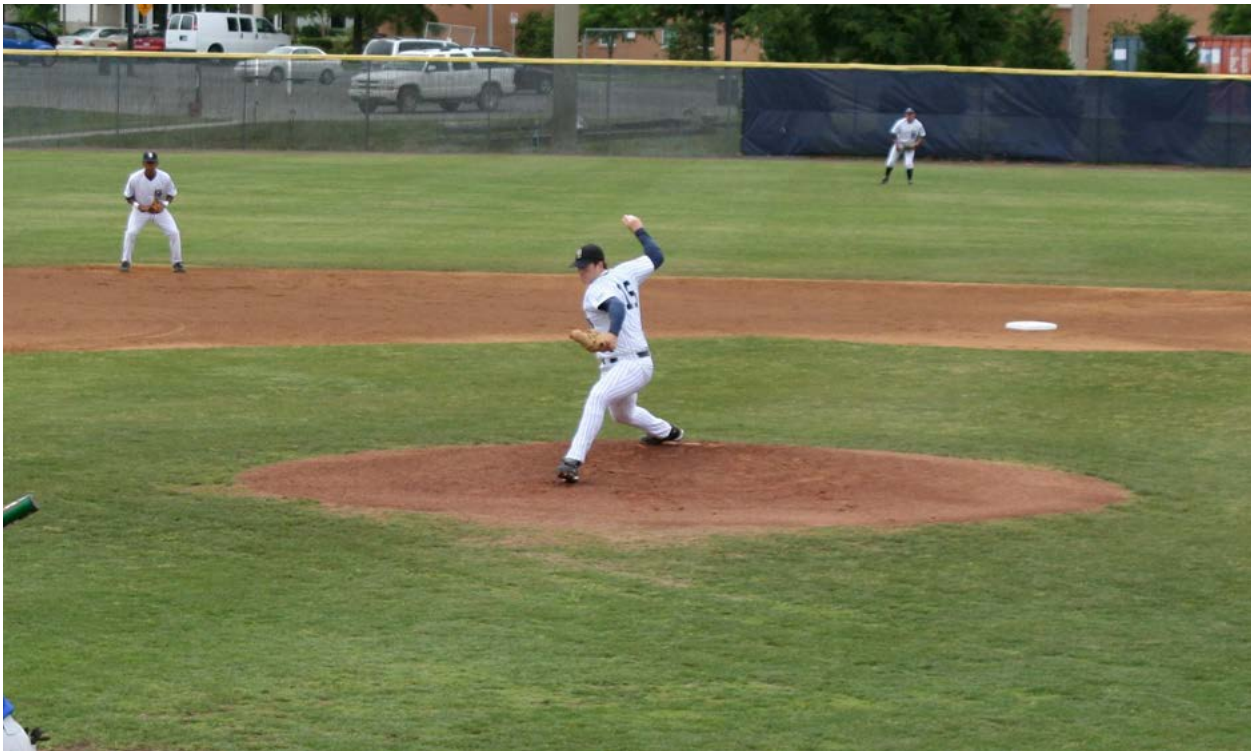

Courtesy of Ryan Bergh

CrossFit can be layered upon professional baseball players' sport-specific training to improve fitness, reduce injuries and allow for superb performance in critical games late in the season.

injuries or in more subtle ways revealed by inconsistency and declining productivity. The August-September period is also when teams push to lock down playoff spots, so the costs of missing players and poor output are amplified.

When players wear down, it looks different for each: a pitcher's losing sharpness on his slider, a catcher's weary legs causing swing mechanics to break down, an outfielder's pulling an oblique due to overuse or imbalances in the core muscles. Poor performances cost games, and injured stars cost organizations millions.

Unfortunately, few players have an effective year-round plan to combat season-long attrition, and shortly after spring training, the number of players at the gym starts to decline due to insufficient programming. Players don't have a program that is stimulating or exciting enough, so they lose motivation and stop out of boredom. If they don't see why the effort is worth it or how it will help, some players are unwilling to invest their time. Other players get stuck doing the same set of workouts for the whole season, and the dreary boredom wears on them until they just go through the motions. Some baseball players simply get tired of trying to figure out what to do every time they step into the gym.

Regardless of the program in place, fatigue has negative effects as the season wears on. When players get tired, they often give up on the gym because they don't know how to scale back. Even the few dedicated players who stick to a program often struggle with soreness caused by an excess of isolation movements, and that soreness can carry over into games.

Players need a stimulating program to help them survive and thrive over the course of the season, and it must fit into their schedule. The workouts need to be scalable to fit the equipment available, which often is limited, especially in the minors or on the road. Workouts also need to follow a periodization schedule so they are appropriately intense with regard to the stages of a player's year—a key aspect of this theoretical model.

Workouts for baseball players must take a relatively short period of time. Sometimes the travel schedule leaves only 30-minute training windows just before batting practice or after a game is over. For the professional player, sometimes

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	Sept.–Oct.	Nov.	Testing No. 1	Nov.	Dec.	Jan.–Feb.	Testing No. 2
Description	Early offseason			Prime training time			
Phase	Active recovery			Fitness development			
Period	Active rest	Structured activity		Foundations	Strength	Volume	
Focus / Goal	Physical and mental recovery	Mobility/movement		Build aerobic and anaerobic capacity	Strength and workload capacity	Increased volume	
Days On	1+	2+		3-4+	4+	4+	
Week 1	M	S M		M S M	M S M S	L S L M	
Week 2	S	L S		S M	M S M L	M S L L	
Training Time (minutes)	20-40	45-75		60-90	60-90	60-90	

	Feb.	March	Testing No. 3	April–June	All-Star Break	July–Aug.	Sept.	Testing No. 5
Description	Spring training			Season				
Phase	Transition			Maintenance				
Period	Tapered strength	Maintain		Maintain	Testing No. 4	Tier down	Taper volume and working loads	
Focus / Goal	Acclimate body to games + fitness training	Settle into season maintenance		Maintain high-intensity fitness, workloads and volume		Maintain intensity, strength with tapered volume and working loads	Intensity, varied stimuli and tapering	
Days On								
Week 1	3+	3+		3+		2-3	2	
Week 2	M S S	S M S		M M S		M S	M S	
	M S L	M M L		M S L		S M S	S M S	
Training Time (minutes)	25-60	25-60		25-60		20-45	20-30	

* S=Short, M=Medium, L=Long

Table 1—A theoretical year-long template for CrossFit programming for a professional baseball player.

it's just about "getting it in," and they need a program that delivers big returns for a minimal time investment. They simply don't always have time for a 60- or 90-minute session at a gym.

In-season programming can easily be worked into a player's pre- or post-game schedule without threatening his ability to perform on the field, and variety in the scheduling of workouts is encouraged. In fact, hitting an appropriate workout before batting practice will get the body warmed up and mobilized for the sport-specific activities to follow. After all, functional movements prepare us for performance as functional athletes.

On the other hand, players are already warmed up for post-game workouts, so they'll need less time in the gym. Training after a game also mixes up the stimulus and prepares the body to perform under fatigue—something regularly required during a season.

Additionally, the workout must apply enough stress to generate results, but it needs to leave a player fully functional. With 10-game stretches common, a workout can't be allowed to create excess soreness, and it can't exceed the recovery capabilities of athletes who are constantly traveling, warming up, practicing and playing. What good is a heavy leg day if an outfielder is so sore he can't run at 100 percent for three days? To limit the strain on any body part, the program needs to have a foundation of multi-joint functional movements as opposed to isolated loading.

While the majority of current players participate in some kind of offseason training program, they seldom have an executable plan during the season. What happens during spring training and the first half of the season, and what happens when a pennant is on the line and performance is critical in the dog days of summer? Without a plan or any way to track progress, players can be plagued by doubt as they try to play through fatigue and nagging injuries to make it to the end of the season.

"Am I doing enough? Will I still be strong in August? Do I have an edge over the competition?"

These questions are poison to a professional athlete, but we can remove their doubt with a data-driven fitness program that can be applied all year round.

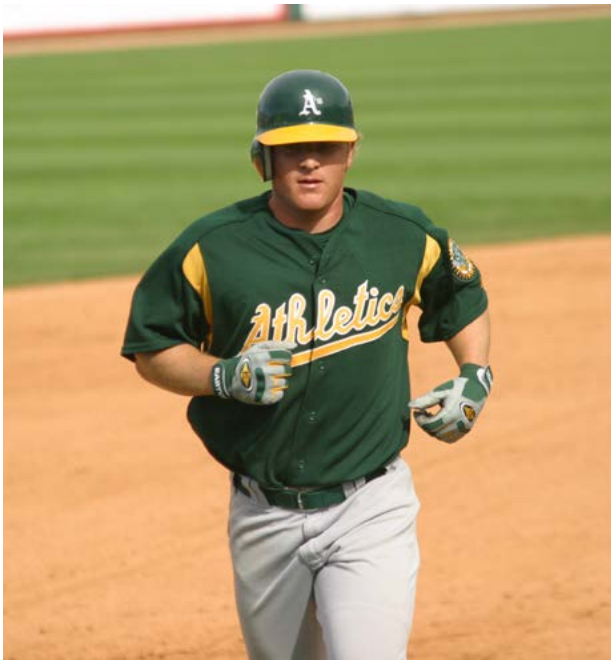
The Periodization Schedule

This key feature of this one-year periodization schedule is that it takes the grind of the season into account while addressing the primary goals: bolstering injury resistance, improving performance and sustaining performance late in the season.

The model also includes various testing phases, which allow a player to see quantifiable progress throughout the year. In some cases (testing in-season), players will see numbers that only indicate capacity is being maintained. While this might initially appear to be a negative, keep in mind that if a player's fitness is sustained over a brutal 162-game season, this is very much a positive. The time for improvements is in the offseason, when players are fresh and can dedicate more time and effort to training. Quantifiable improvements and repeated confirmation of retained fitness validate the program but also provide players with a mental edge during the remainder of the season.

The programming is designed to maintain a higher baseline level of fitness each year, allowing for year-after-year gains and dramatic performance improvements over a career.

The periodization schedule outlines the number of training sessions per week, the length of each session, the focus of each session and an example of the time domains that are appropriate in each stage of the year: active recovery, fitness development, transition and maintenance. Each phase has a unique goal and focus, and the work builds on the preceding stage and becomes the foundation for the next.



Courtesy of Danny Putman

Danny Putnam was a first-round draft pick and made it to the Major Leagues in 2007. His experiences as a professional athlete are the basis for the theoretical template in this article.

Players need mental and physical rest after a long season, so the early offseason phase is designed to give the athlete ample time to recover. At the same time, it provides the framework to keep athletes moving with a purpose. The active-recovery phase is not a concession, nor is it optional to skip this stage and move right into fitness development after a period of total inactivity. Baseball players need to rest, but some momentum is required to ensure continuity.

> A player will see greater improvements from high-intensity training, and the limited time investment leaves a great deal of time to focus on baseball activities.

The active-recovery phase is broken out into two periods. The period of active rest gets the player moving but having fun. In this period, the athlete should not feel like he is in training. This is programmed rest with movement. Activities could be anything from hiking, swimming and running to doing yoga or playing a sport other than baseball.

The second period is structured activity, with an emphasis on improving mobility and technique and building a foundation for the fitness-development phase that follows. Workouts are more structured, intensity starts to increase, and technique is king. In this phase, Olympic lifts are learned or reviewed and refined. Speed and intensity only increase as the athlete proves he is capable of maintaining technique in each prescribed movement.

The fitness-development phase is broken down into three components: foundations, strength and volume. Once players are able to display proper technique in strength work and under duress in a conditioning workout, they are able to move past the foundations stage and into the strength stage. During the strength stage, the goal is to increase cardiovascular capacity and overall strength and power. Athletes will train four to five times per week, with a greater focus on Olympic lifts in strength sessions and conditioning workouts. This stage is where athletes will see

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the most dramatic improvements in their 1-3-rep maxes and work capacity in conditioning workouts. During the volume stage, greater emphasis is placed on increasing total repetitions in any workout, and greater priority is given to longer domains in order to prepare players for the volume of work they will encounter during the season.

Even with the high level of intensity and increased volume during this phase, players will have plenty of time and energy to work on sport-specific skills. A player will see greater improvements from high-intensity training, and the limited time investment leaves a great deal of time to focus on baseball activities.

The transition phase is spring training. During spring training, athletes will be adjusting to full days of baseball activities—including games—while maintaining their workout schedule. Players will cut back workout sessions to three times per week, also scaling back the time of each session in order to compensate for the increased baseball activities. Athletes taper strength work in this period, and intensity and technique are the top two priorities. We still expect to see athletes performing conditioning workouts with the same loads they used in the fitness-development phase, and the workout durations and rep schemes will remain fairly consistent, with only a small decrease in overall work considered ideal.

During the second half of spring training, the transition phase will prepare for maintenance mode. As spring training reaches its peak, players may not be able to complete a full strength session and a conditioning session, so the key is to program so both elements are included in many workouts. For example, a player could combine strength work and intensity by doing 3 power cleans every minute for 10 minutes, increasing weight each round. In this way, a player can do strength work with enough intensity to reap some conditioning benefits, all in a relatively short amount of time.

The maintenance phase is all about keeping a player's physical capacity at or near the levels seen at the beginning of spring training. Some deterioration is unavoidable; it's expected and even accepted. However, this model is designed to minimize the physical and mental breakdowns that derail all too many players' seasons and careers. If a player can end the season at 90 percent off spring-training physical capacity as opposed to 70 percent, it really means the player has improved capacity by 20 percent. It is simply not possible for a player to maintain 100 percent of his fitness level over 162 games in six months, so this model is designed to preserve as much fitness as possible, giving fitter players an edge over those who are broken down, injured or exhausted. For example, consider a pitcher whose fastball velocity remains very consistent as opposed to dropping 2 mph or more over the course of a season.

In addition, a player is then able to start the next yearly programming cycle at a higher level because deterioration has been avoided as much as possible. That results in greater fitness capacity year after year, which helps improve a player's longevity.

The maintenance phase is broken down into three time periods during the season. In the first half of the season, the player will work out fewer times per week than in previous phases, but the goal is maintaining a high level of intensity and solid workload. Only during the first period of the maintenance phase will a player be exposed to a conditioning workout longer than 25 minutes, and this is only programmed once per month.

Courtesy of Ryan Bergh

Maintaining fitness throughout the year means longer careers and fewer injuries for professional baseball players, says Danny Putnam.

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Target	End of Active Recovery	Fitness Development	Spring Training	First Half of Season	Second Half of Season
Workout Testing	For best time/reps	For best time/reps	For best time/reps	For best time/reps	For best time/reps
Workout Training Time Target (minutes)	Under 15:00	Under 10:00	Under 11:00	Under 12:30	Under 13:30
Testing Load	3-rep max	3-rep max	3-rep max	3-rep max	3-rep max
Strength Session Load	Body/PVC	3-rep-max overhead squat	3-rep-max overhead squat	80% of last 3-rep-max overhead squat	70% of last 3-rep-max overhead squat

Table 2—Training versus testing guidelines.
The table uses the sample conditioning and strength tests detailed below.

During the second period, which begins after the all-star break and runs to the beginning of September, players will only do two or three workouts per week depending on their schedule and how their bodies feel. During this period, loads will be decreased even if a player feels like he can do more. This practice might seem counterintuitive, but remember the end goal of consistent on-field performance for the entire season. A planned reduction in training load takes into account the cumulative stress of 100 or so games.

In the final maintenance period, workout loads are decreased again, as are the number of training sessions per week. The goals for the final maintenance phase are keeping a player moving regularly, continually stimulating the body and mind to keep both fresh, and retaining high levels of aerobic and anaerobic capacity. Intensity is still maintained, but workout times are not expected to improve even with a reduction in loading. In fact, some drop-off in conditioning performance is expected, and some training intensity is sacrificed in order to support late-season on-field performance.

Testing

Testing phases are also in place at key periods in the season to track a player's fitness throughout the year. Data will reveal an athlete's improvements during the offseason, maintenance levels during the season and year-over-year increases in fitness. The mental benefits of data have already been noted, but the significance of these benefits cannot be overstated: When players know without a doubt that they are fitter, stronger and have more endurance than the year before, it has a dramatic effect on their confidence and performance. When players have proof they are in top physical condition as rivals falter late in the season, the mental edge is a game changer.

Below are a pair of test workouts that evaluate multiple components of fitness and are safe for athletes during any phase or at any point during the season.

Sample Conditioning Test

2 rounds for time of:
Run 400 m
40 air squats
30 sit-ups
20 push-ups
10 pull-ups

Sample Strength Test

10 minutes to establish a 3-rep-max overhead squat

Each testing phase should include one or two test workouts that are easily accessible (no specialized equipment). Tests should avoid high-skill gymnastics movements in order to decrease the risk of injury if a player is fatigued late in the season. The workload of any tests must be manageable at any point in the testing phases of the schedule—even when players are fatigued during the all-star break after playing half the season.

Along with a conditioning test, a 3-rep-max squat, clean, overhead squat, deadlift or barbell complex will help coaches evaluate strength numbers. Why not a 1-rep-max? While a 1RM is an important part of the fitness-development phase and can be used to calculate percentages for working weights during strength sessions later in the year, 1RMs will be avoided for testing to reduce the likelihood of injury and excessive stress. We can get the numbers we need from a 3RM.

Table 2 shows how a test is treated differently than a training session during the schedule.

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To illustrate, assume the conditioning workout on the previous page is our primary testing workout but also shows up as a general workout in a training session during each phase. For the test, we want the player to go all out to give us the data we need. In training, we expect different results based on what phase we are in. This is part of the periodization plan that takes into account the stress of a baseball season. It is therefore acceptable if a player completes task-priority workouts slower or performs fewer reps in time-priority workouts as the season progresses.

For strength work, testing parameters remain the same—maximal effort—but in general strength sessions we program a lower percentage of the maximum load for the working weights.

While this periodization schedule is built for a professional baseball player, the four stages and scaling options can easily be adjusted and applied to college, high-school or youth programs. While the periodization schedule follows a systematic approach, trainers and athletes can use the framework to scale in other ways according to each player's needs and ability. This is where CrossFit combines the science of intensity with the art of individualized programming and scaling.

Programming Samples

Let's take a look at sample programming to build on the foundation of the periodization schedule.

When possible, a baseball player's training session should have a warm-up and core segment, a skill or strength component, and a conditioning workout. However, as the season progresses or as the schedule demands, it might be necessary to adjust the plan by removing the strength/skill portion. As you will see, high-skill gymnastic movements should be scaled unless the athlete has shown mastery of technique. For example, strict pull-ups are preferred over butterfly chest-to-bar pull-ups. In general, kipping pull-ups and strict pull-ups are more appropriate for baseball players because we need to consider the stress already on the shoulders from baseball activities, and eliminating butterfly pull-ups can reduce intensity—a good thing in this case.

Another key element in programming for baseball players is the decreased prescribed weights. With regard to Table 3, could the athlete still be physically able to complete the conditioning workout with 135 lb. for the snatch and 185 lb. for the deadlift as the season progress? Yes, but we are programming for sustained on-field performance, and reductions in loading will facilitate success in games. Therefore, we scale the load back in order to retain

Warm-up/Core	Skill/Strength	Workout of the Day
•Stretching •Active warm-up •GHD mobility •3x7 GHD sit-ups	Snatch technique: 20 minutes to work full squat snatches	4 sets: 5 snatches, 135 lb. 7 burpees over the bar 9 chest-to-bar or strict pull-ups 1-minute rest between sets Rest 2 minutes 4 sets: 250-m run 10 deadlifts, 185 lb. 20 double-unders (or 50 singles) 1-minute rest between sets

Target	End of Active Recovery	Fitness Development	Spring Training	First Half of Season	Second Half of Season
Workout Completion Time (Minus Rest)	Under 13:00	Under 12:00	Under 13:00	Under 14:30	Under 15:00
Strength Load	Technique (be able to pause at key points)	Establish 1-rep max	Work to 90% of 1-rep max	Work 3 reps at 70% of 1-rep max	Work 3 reps at 60% of 1-rep max
Workout Load	Keep technique and hit time	135/185 lb.	135/185 lb.	115/155 lb.	115/155 lb.

Table 3—A sample workout with recommended scaling throughout the year.

Warm-up/Core	Skill/Strength	Workout of the Day
• Active warm-up • Toes-to-bars • Windshield wipers	Front squats Fitness development and transition 5-5-5-3-3-3-2-2-1 Maintenance 5-5-5-3-3-3-3	Baseball Diane: 21-15-9 Plyo hand-release push-ups Deadlifts, 225 lb.

Target	End of Active Recovery	Fitness Development	Spring Training	First Half of Season	Second Half of Season
Workout Time/ Reps	Keep moving, few breaks as possible	Establish best	Within 110% of best time or 90%+ of best reps	Within 120% of best time or 80%+ of best reps	Within 130% of best time or 70%+ of best reps
Strength Load	Establish baseline	Work for 1-rep max	Work to 90% of 1-rep max	Work 3 reps at 70% of 1-rep max	Work 3 reps at 60% of 1-rep max
Workout Load	Keep technique	225 lb.	225 lb.	185 lb.	185 lb.

Table 4—A second sample workout with recommended scaling throughout the year.

intensity but reduce stress, recognizing that a player might complete the workout after a 12-inning game or before a 10-hour bus ride. During the second half of the season, it might be necessary to scale back even further, and the athlete needs to understand that it is not about pride but rather setting himself up for success. Playing 162 games is a dramatic increase in workload, so training loads must reflect that volume.

Playing 162 games is a dramatic increase in workload, so training loads must reflect that volume.

Similarly, the expected times listed for conditioning workouts show that we plan for some decline later in the season. This is based on the reality of the grind of the season.

Table 4 shows a fun variation of one of the classic benchmark Girl workouts: Diane. While I am not a fan of messing with the classics, this is a good example of how programming is adjusted for professional ball players. Overhead stability is critical to being more injury resistant when diving for a ball or diving into a base, and it's critical to avoiding the injuries common to repetitive throwing. While I believe baseball players need more functional overhead training, I will not program high-volume handstand push-ups for a baseball player given the demands already placed on that joint every day of the season. Therefore, a baseball version of Diane would include a plyometric hand-release push-up as opposed to a handstand push-up. We still get an explosive pushing movement without risking irritation to a joint that's used hundreds of times in practice and games.

Again, you'll see that the working weight is scaled back at various points in the season.

Hall-of-Fame Fitness

As stated earlier, CrossFit isn't a replacement for sport-specific training. But I believe it can provide greater fitness to baseball players, keeping them on the field and performing at a very high level year after year.

Attitudes toward fitness are changing in baseball, and aspiring athletes are encouraged to experiment with this program to generate the best results when the umpire yells, "Play ball!"

About the Author

Danny Putnam was an All-American at Stanford University and a first-round draft pick of the Oakland Athletics in 2004. He made it to the Major Leagues in 2007. He holds CrossFit Level 1 and Level 2 certificates, and he trains at Fallbrook CrossFit in San Diego, California. He is the managing director and co-founder of Lurong Living.