E-BOOK

BACK TO COMPETITION

What you need to know before starting your preparation phase

0. Introduction

1. Start slowly

2. Physical training for higher performance and injury prevention

3. Avoid motor errors

4. Improve decision making

OVERVIEW

‘Preparation is key’. You must have heard this sentence a thousand times. However, as a good coach, you know it’s true. In this e-book, we’ll help you get the most out of the preparation phase before the new season starts.

Everything we discuss is with only one goal in mind: unlocking your players’ talent and win as many games as possible.

A well structured preparation schedule is the first big step towards that goal. During those first weeks before the competition, you can develop a strong physical and cognitive basis. It will help you to start your first competition game strongly and keep this level throughout the season.

Laying the right foundations will also prevent injuries so you have more fit players throughout the full season. Look at what happened in Germany when they resumed the soccer competition after the lockdown because of the Covid virus. They only had 10 days for team training, and many players got injured before or during the first game.

Without a carefully drafted preparation schedule, you might run the same risk.

INTRODUCTION

Before we dive into the practical part of this e-book, let's warm up by explaining what happens with the body during an off-season or other periods of inactivity. You have to keep in that players are no longer exposed to the stimuli they are usually exposed to during competition phases. This obviously has a big impact on players' bodies and minds:

Athletes' muscles are no longer used to unpredictable and explosive movements, meaning they face a higher risk of injury when they are all of a sudden confronted with these explosive movements again.
Because athletes don't react to external stimuli such as the movement of an opponent, their brain becomes slower in processing these stimuli and making the right decisions. As a consequence, the athlete will react slower and make poorer decisions.
Sports-specific movements are often not maintained, which results in poorer execution after the off-season. Less efficient, less power and less precise. This does not only affect the quality of the movement, but also increases the risk of injury.

In short, if players are not prepared the right way, the level of their game will be too low and there will be a high risk of injury.

Don't know how to handle this situation? No worries - we're here to help. We summarized the most important elements of a good preparation phase for every team sport in 4 chapters.

INTRODUCTION

START SLOWLY

We'll start with common sense. We know, it's obvious. However, we still see a lot of coaches with the following thought process: 'I only have a few weeks of preparation, so let's work as hard as possible and cram as many intensive training sessions into one week'.

This is a recipe for failure. Remember, your players are not used to this type of intense activity anymore.

But, we know you know better ;-)

As a general guideline, you can use the following steps to gradually increase the load on your players.

1. Start with low volume & low-intensity training (short sessions, low number of executions, limit explosive actions)
2. Slowly increase intensity (controlled explosive actions, but limited number of actions)
3. Slowly increase volume and start adding unexpected elements in game-like situations (higher number of actions and longer sessions, as well as more unpredictable explosive actions)
4. Further increase volume and intensity in game-like situations

In the build-up to the restart of the competition after COVID, Bayer 04 Leverkussen gave us a great example of this framework.

They started training sessions with low intensity and low volume. Then they added more uncontrolled movements via small-sided games. In the final stage, they had friendly games, but limited the volume by only playing for 45 minutes in total. The total time was progressively built up every game, giving their players' bodies the time to adapt to the volume and intensity of a full game.

PHYSICAL TRAINING FOR HIGHER PERFORMANCE AND INJURY PREVENTION

PERIODIZATION FRAMEWORK

When looking at periodization for monocycle competitions, such as soccer, basketball, hockey and volleyball, the annual plan is divided into three phases:

1. The preparation phase
2. The competition phase
3. The transition phase (or off-season).

Since monocycle competitions are usually long and very demanding on players, the preparation phase is crucial. If you do this well, you will enable your players to keep performing at a high level throughout the season, as well as prevent injuries.

As you can see in the figure below, the preparation phase is divided into 4 smaller phases. As the preparation phase is the focus of this e-book, we'll walk you through its 4 phases.

Preparation				Competition		Transition
Anatomical adaptation	Hypertrophy	Maximum strength	Conversion to specific strength	Maintenance of max strength and specific strength	Cessation of strength training	Compensation training

Phase 1: Anatomical adaptation

Many coaches start the preparation phase with hypertrophy training. However, hypertrophy or muscle size is not always relevant in some sports because it's often nonfunctional and could slow down the athlete.Furthermore, hypertrophy training comes with working each set to exhaustion, which could cause injury.

Usually, athletes do very little strength training during the off-season. That's why it is a better idea to start a strength program aimed at adapting the anatomy for the heavy loads to follow. The main objective of this phase is to prepare the muscles, ligaments, tendons, and joints to endure the following training phases.

In this phase, it's important to focus on strengthening the core muscles. These muscles work together to support the trunk and absorb shocks during many sport-specific movements, such as changing direction, jumping, and landing. They are easy to incorporate in any session and will bring you a long way in terms of performance and injury prevention. Even if some of your players are not doing strength programs, it's worth to include these core exercises in your team training sessions

The main goal is to involve most muscle groups in a multilateral program. It should include a high number of exercises, without pushing the athlete. Pay specific attention to balancing the flexors and extensors surrounding each joint. For example, make sure to train both quadriceps and hamstrings to prevent imbalances and decrease the risk of injuries.

Many injuries occur because insufficiently trained muscles lack the force to control landings, absorb shocks, or balance the body quickly. That's why plyometrics can be introduced after a few weeks, but with low intensity. The highest intensities should be reached after the maximum strength phase.

Also agility training should be slowly introduced during this phase, preferably at a low volume. It's important to have the athlete react on a visual cue every few seconds on a small surface. In the later phases, the volume can go up by increasing the surface area and doing more repetitions.

The duration of this phase depends on the player's background in physical training and the importance of strength in the given sport. Are you working with young or inexperienced athletes? In an ideal world, you would spend 8-10 weeks in this phase. Are you working with experienced athletes? In that case, 2-3 weeks should be enough.

Phase 2: Hypertrophy

In the old definition of hypertrophy, hypertrophy training is done until exhaustion to increase muscle size. However, increasing muscle size is not always relevant for many team sports. The main goal of this phase is to prepare the body for the maximum strength phase to follow, by progressively using heavier loads.

There are 2 approaches to hypertrophy training, depending on the requirements of the sport.

The first one (hypertrophy 1) is used if the athlete requires a distinct increase in muscle size and strength. It relies on using loads between 10-15 RM until exhaustion, with rest periods of 60-90 seconds.

When the main goal is to prepare the fast-twitch muscle fibers for the hard work to follow during the next phases, hypertrophy 2 is more relevant. This uses loads from 5-8 RM with rest periods of 90-120 seconds.

The duration of this phase again depends on the age, physical development and experience of the athlete. At the end of this phase, it's a good idea to perform a maximum strength test in order to plan the training percentages of the first maximum strength macrocycle. You should spend at least 2 weeks in this phase.

Phase 3: Maximum strength

The main goal of this phase speaks for itself: develop the highest possible level of strength. In most team sports, maximum strength itself does not have a direct impact on performance. But power does. And since power is the product of force and velocity, it is logical to develop maximum strength first and then convert it to power.

There is some scientific research claiming that maximum strength can be achieved without using heavy loads. However, it's not yet widely accepted, so the most common way is still to use heavy loads - usually between 70 to 90% of 1RM. In this phase, it's best to use a higher number of sets with a lower number of exercises.

The duration of this phase is usually between 1 to 3 months, depending on the given sport. During this high-intensity period, don't forget to add a week with lower intensity (50-70% of 1RM) every 2 to 3 weeks, so you don't burn your athletes before the competition even starts.

Phase 4: Conversion to specific strength

In the last phase before the athletes should be at peak level, the main goal is to convert strength gains into sport-specific power.

In this phase, coaches should combine power training with agility and plyometrics training. Only by using this approach, the gain in power can be applied in game-like situations, so the athlete is prepared for the sport-specific requirements of competition.

Conversion of power can be achieved in 4 to 5 weeks.

Throughout this phase and the rest of the season, a certain level of maximum strength training should be maintained to avoid the risk of detraining effects, which eventually leads to power loss. This is especially the case in most team sports with long seasons.

For more in-depth information on this subject, we suggest you read the book 'Periodization training for sports' by Tudor Bompa and Carlo A. Buzzichelli.

ECCENTRIC TRAINING

We do want to dedicate some extra attention to the importance of eccentric training. Many people believe that to sprint faster or jump higher, concentric training is the most effective. However, sports performance professionals all agree that eccentric training has a high impact on these elements.

To better understand the importance of eccentric training, let's have a quick look at the stretch-shortening cycle. The stretch-shortening cycle is basically the cycle that happens when you first bend your knees or squat and then extend them again to jump. This cycle consists of an eccentric, isometric and concentric, phase. And the eccentric phase is probably the most underestimated one. Here are a few reasons why you should put some focus on the eccentric phase in your exercises:

- Your player could be very strong in the concentric phase and have great acceleration skills. But if his legs are not strong enough to slow down before a change of direction (eccentric phase), he will lose crucial milliseconds during every movement.
- Have you heard of elastic hysteresis? This is the phenomenon that happens when your muscles and tendons don't have sufficient stiffness and lose energy during movements. Via eccentric training, tendons and muscles will become better at storing energy when landing or preparing a change of direction, and can then use that energy more efficiently for the subsequent action (e.g. another jump or a change of direction).
- Eccentric training makes muscles and tendons stronger and prevents injuries.

To sum it up, paying enough attention to eccentric training will increase your team's performance and decrease the risk of injuries significantly.

Pro tip: if you have access to inertia devices (flywheel machines), include eccentric overload exercises in your program.

AEROBIC VS ANAEROBIC TRAINING

During the preparation phase, you obviously also want to add some cardio work. Since this topic needs a full e-book itself to be explained properly, we won't go into detail here.

However, we want to point out the importance of the dominant energy system for your sport. The intermittent nature of games in team sports is illustrated in many different studies and tells us that transitions between modes of activity happen every few seconds (change of direction, jumps, sprints, etc.). The frequent changes of direction and velocity of movement require inertia to be repeatedly overcome. This means that there is a considerable added metabolic and physiological demand compared to just running in a forwards direction without interruption.

This sounds a bit complex, but the key message is that to train in a sport-specific way, coaches should impose corresponding stresses on metabolic systems to those experienced during match-play.

For example, basketball uses the aerobic energy system for only 20% during games. So don't let your players only run 10k sessions with a low BPM, but also focus on anaerobic capacity via interval training and change of direction drills on a smaller surface.

AVOID MOTOR ERRORS

Information about every movement players make is stored in their brains. Think about running technique, jumping technique, or passing technique. When players learn new techniques or types of movements, they constantly send information to their brains about how they execute the movement. After a while, the movement is executed without having to think about it.

One movement pattern consists of separate smaller movements. A total movement pattern such as a pass is a sequence of small patterns (walking, placement of the supporting leg...) that thus lead to one whole. Over the years, we had to learn every movement and store that information in our brains. It is therefore important to understand that if we do not tackle motor errors in a structured way, this will or can have a major negative impact on the learning curve of your players.

As you probably have understood by now, there is a potential risk when players store information about a faulty technique, which is called a motor error or motor fault. They can be seen as deviations from the ideal athletic technique.

Before we look at the types of errors and how you can solve them, it's important to know that not every player should have the same ideal athletic technique. On the contrary, self-discovery is a very important aspect of sports education and the development of the individual. Put simply, the player should discover the movement him or herself and the coach should only intervene if the motor error has a negative impact on the efficiency of the movement.

Evaluating the movements and the technique of the players early on in the pre-season phase is crucial. If you don't pay attention to this, the chance of stagnated motor errors will increase, making it hard to correct them during the season.

Since motor errors are a complex fact, we give you a short overview of the types of errors and potential causes, as well as some concrete tips that you should keep in mind during the preparation phase.

AVOID MOTOR ERRORS

Types of errors

In order to correct or treat errors, we need to know what stage the errors are in.

- Normal errors: these are errors that we prevent during the normal learning phase.
- Stagnated errors: these are consolidated errors that have not been addressed during the learning process and are therefore already deeply interwoven in our motor skills.

Possible causes of an error

There are many possible causes of motor errors. Below are the most common ones:

- Fear
- Decreased concentration or motivation
- Tiredness
- Insufficient development of motor capabilities
- Mistaken interpretation of the motor sensations
- Inexact and defective image of movement
- Unfamiliar external conditions

Why would you care about the potential causes of a motor error? Well, if you identify a motor error, it is recommended to identify the cause first. This can help tremendously in solving the error.

Here's a quick example to clarify - a player might perfectly master the execution of a movement, but starts making mistakes as soon as there are too many other things going on (e.g. during a small-sided game). If this is the case, you will have to take the stress away first before you can solve the error. Then you can start consolidating the right movement so it becomes second nature and he can also execute it correctly during more stressful situations.

AVOID MOTOR ERRORS

Another example is when the player has a defective image of the right movement (e.g. the player does not use an arm swing to jump). In this case, you have to start almost from scratch by showing how the right movement is done, step by step. Before the player can start practicing the movement again, he first has to understand the correct movement.

Tips and tricks to correct errors

- Probably the most important tip for identifying and correcting motor errors is: ask for help when you need it. It is not the main task of the coach to be knowledgeable about motor training, but it is his job to highlight potential issues.
- It is important for the athlete to be aware of the error and to understand the reason for the error. Don't bother him or her with the anatomical or biomechanical explanation, but explain to him or her why this will be less efficient for his or her execution and end result.
- If you see multiple errors, deal with the most important one first.
- Do not handle more than one error in the same session. If you want the player to store the information on the corrected movement, his brain should not be overloaded.
- Never correct an error when the player is fatigued.
- It is important to give the player time in his learning process. Progressing too quickly can lead to errors. Repetition is key.
- Are you dealing with a complex error? Break it down in smaller parts and work towards the big picture in phases.
- If you have the possibility, work with images, videos, or even drawings. This helps the player to imagine the right movement.

AVOID MOTOR ERRORS

IMPROVE DECISION MAKING

The level of decisional involvement can be different depending on the sport you are in. For example, the frequency of taking decisions during a marathon is much lower compared to when you're playing a soccer or basketball game.

However, in most team sports that involve a ball or opponents, the decisional involvement is extremely high. Players need to make decisions every few seconds. So, it's needless to say that decision making skills will have a significant impact on the results of your team.

After the off-season, the speed of decision making of every athlete will have decreased. This is because for a certain period of time they are no longer exposed to sports-specific situations during which they have to make quick decisions. Gaining a deeper insight into decision making can help you, as a trainer, to bring the players' decision making up to level as quickly as possible.

HOW TO TRAIN DECISION MAKING?

According to literature, decision making training means "subjecting the individual to situations that constantly implicate brain areas involved in the decision making process." We won't bother you with the medical terms or the different brain areas that are involved in this process. Instead, you can follow these 5 practical tips below.

1. Increase decisional involvement appropriately

The level of the player will determine how complex decision making training can be. For inexperienced players, drills should be less complex compared to experienced players. To distinguish between complex and less complex, we suggest you use tasks with low and high decisional involvement. The better the player becomes at decision making, the higher the decisional involvement should be. For example, an inexperienced player should start with a drill in which he only has to make 1 simple decision per action.

In the same vein, try to limit the number of variables that can occur in a given action or task. Changing situations are difficult for a beginning player to deal with.

2. Let your players make their own decisions

Many players are afraid to make their own decisions. Therefore, give the player the freedom to explore on their own. Don't make decisions for them and let them experience what the most effective way is to execute an action or a drill. If the player makes a decision that has a negative impact on the result, don't just correct him, but try to guide him to the right solution by asking the right questions.

Another simple example is giving your players some freedom during warm-up drills. You can do a guided warm-up, but you can give them the task to decide themselves which type of movement they want to execute when jogging from point A to point B.

3. Eliminate time pressure

One of the challenging factors of decision making is time pressure. The player who makes the best decisions in a shorter time frame will have an advantage over his opponents. However, in a training context, time pressure can have a negative impact on the end result.

If your goal is to improve decision making, you should apply little or no time pressure in the beginning. Give the players all the time they need. Once this goes smoothly, you can slowly build up and start adding time pressure.

4. Think out of the box

Small-sided games are already used very frequently, but who says you need to stick to the rules? What if you change the shape and the size of the court? Or what if you don't set up the goals or the baskets facing each other, but you put them next to each other?

Your players will approach this new situation in a different way, trying to find the best way to score points. They will start thinking out of the box and will start using their creativity, which in the end will improve their decision making skills.

5. Involve your players in tactical decisions

As a coach, it's your job to share your knowledge and expertise with your players. It's your responsibility to make them better at understanding the game. Every coach can feel differences between players in terms of how well they 'understand the game'. Players who are better at this generally also make better decisions during a match. Sounds familiar?

You can improve your players by involving them actively in the tactical part of the game. If you have some time with a player during practice, analyze a specific action happening on the field with him. Ask him what he thinks could be done better in that action and guide him towards the right solution.

You can also do this when preparing the tactics for a game. Let them think along with you from time to time. Explain the why behind your decisions. A player who better understands the why will be in a better position to make the right decisions when there is no guidance from the coach possible.

Wow, you must be really interested in this topic if you made it this far. If you want to learn more about these topics or about how Ledsreact can help you during your preparation phase, do not hesitate to reach out. We're always happy to help.

We wish you all the best this season!

And remember: training more efficiently will help you unlock talent and win competitions.

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READY?