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TACTICAL PERIODISATION IN FOOTBALL

PART 1

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Introduction

Football is characterised by the chaotic nature of the game. It is up to the trainer and his or her staff to prepare players physically, technically, tactically, and mentally. While traditional periodisation models often focus almost exclusively on the physical aspect, the concept is applied in a well-considered way in so-called tactical periodisation.

The game model of the team determines the content of training, and one does not train the components separately, rather they are integrated, like they occur during a match. In short, it is a different view of the same thing! The purpose of this article is to explore the role tactical periodisation in developing professional footballers.

From tactics to physical

In recent years we have seen a shift in the approach to football training and periodisation. (1) In an attempt to simplify the complexity of the sport, many traditional periodisation models emphasised physical attributes. However, to do justice to the identity of football, as well as to make an optimal transfer to the game, it is impossible

to train the different dimensions separately. Maximising performance is the result of multiple physical, technical, tactical, and mental skills. Tactical periodisation challenges the simplified thinking about football, which tends to limit itself to training one aspect at a time. (2,3) The concept of block periodisation, based on the idea that a large part of the training process is aimed at a minimum number of skills, has given way to this alternative approach to training and periodisation.

As the name suggests, the team's style of play is at the heart of the entire training process. This game model is a collective term for everything that has been agreed in a team about the way they want to play, i.e., how it pressures the opponent, how the team builds up in-possession, what formation they play and so on. As a result, it gives more order and predictability to the unpredictable nature of football so the team can ultimately try to influence the result of the game. The concept of periodisation is applied in a well-considered way and refers to the tactical principles that are trained throughout the season. Driven by tactical

principles, as much training as possible should be completed in the holistic core where all dimensions overlap (see Figure 1). The game model (or style of play) acts as the overlapping dimension in which the other dimensions exist. This perspective contradicts with the common view in which the four dimensions are considered separately and with equal priority.

Method and principles

The main principle of the model is known as specificity. This relates to the extent that what you train corresponds to the match situation. The different dimensions (tactical, technical, physical, and mental) are not trained separately through isolated exercises, but together. Ideally, each exercise relates to at least one (but usually all four) moments of the game (see below), the appropriate space, game-like intensity, and decision making:

- 1) offensive organisation;
- 2) defensive organisation;
- 3) transition from defence to attack;
- 4) transition from attack to defence. (1)

Players are repeatedly exposed to football

situations where the physical dimension is related to one (or multiple) tactical principles of the team. Guided by these principles, they are challenged to execute technical skills while making the right choices. For example, defending zonally, where players are responsible for a specific part of the field instead of an opponent, forces them to think about their position in relation to fellow players and opponents. Another example would be compulsory folding back (or recovery runs) and closing in from behind over a specific line of restraint during games. This will not only lead to retaining compactness or holding defensive shape. Players are implicitly forced to do more high-intensity running (all distance covered above a speed of 20 km/h). Thus, rather than training individual attributes, they are trained in an integrated way, as in the game. This does not necessarily mean that only 11-a-side is played. There are times when the game is deliberately simplified, so that players better understand how to handle various game situations. Examples of such adjustments might include changing the number of players, the size and/or shape of the field of play, the work/rest ratio, the rules of the game, etc. However, it is important that this is done without losing the chaotic nature and complexity of the game. Otherwise, we would train in a way that has no connection to the reality of the game.

Besides the principle of specificity, the model has 3 sub-principles that are used to make this possible: (2,3)

1) Making the game model trainable

This is done by creating situations that make specific principles appear more often. These principles are tactical guidelines that apply in almost all situations. For example, a principle of play in offense could be that, for a striker to be available, a coach might instruct him to move to the side where the ball is. In this way, players can experience situations several times, find solutions and learn by repetition. This can be done, for example, by devising an exercise in which the attacking team is confronted with a situation in which there is a good chance of them losing the ball and they are forced into a defensive change-over. After a short period of playing on, the organisation of the exercise is restored, and the same situation occurs again. By changing the shape of the playing field, players are implicitly forced into certain actions.

2) Systematically repeating game principles

This follows a wave-like motion. The non-linear progression can take place during the season both in the short term, from match to match, and in the long term. At the start of the season, the priority is on the fundamentals that are an integral part

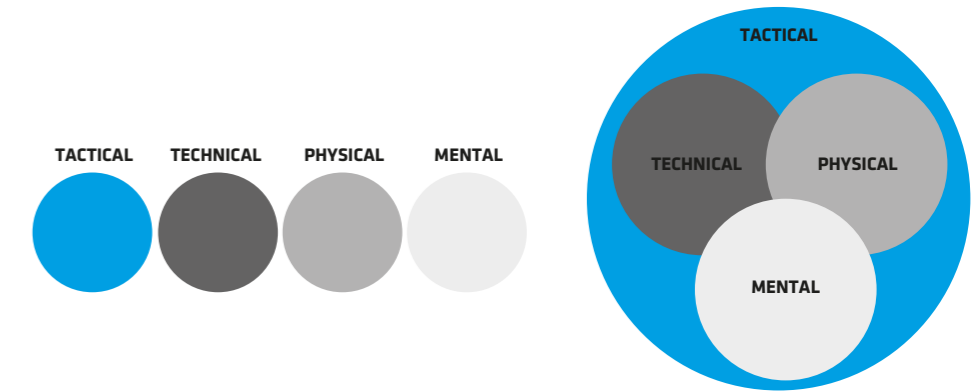


Figure 1: The traditional way of periodisation versus tactical periodisation.

of the game model. Later in the season, usually after preparation, this shifts to more complex and positional principles that can vary from match to match. There are weekly or even daily variations while the basic principles return systematically in the training programme. For example, a basic principle in defending is that players are not (wo)man-oriented. No man marking is played, but players coach their teammates to "take over" opponents when they enter their zone.

3) Stable and recurring weekly schedule

The same distribution of physical load is maintained in relation to match days (MD: match day). The tactical objectives of each training session may vary according to the specific needs of the team, but the physical component trained on a particular day in relation to the match day (e.g. MD+1, MD-4, etc.) remains the same.

From macro to micro

Football consists of a succession of complex situations. It is characterised by high-intensity actions of which the duration and intervals are unpredictable. Players need to possess a wide range of physical, tactical, and technical skills, combined with fast information processing to make the right choices under pressure. Because a football season has a long competitive period stretching over several months, with one or more matches scheduled each week, there is no such thing as peak performance. To achieve success, you need to be able to perform at a consistent level. It is therefore very important to ensure that players receive the right physical load and tactical knowledge every week, while ensuring adequate recovery and regeneration. According to the founding fathers of tactical periodisation, adaptation only occurs when training is carried out at a constant volume and high intensity every week. (1) Maximum concentration and intensity are also required

during recovery training. Players must still perform each exercise similar to how they would do it in the game. However, the complexity and duration of each exercise will be shorter and maximum recovery between repetitions is generally aimed for. Nonetheless, to stimulate players both physically and mentally, it can sometimes happen that they are not given the time to fully recover. For example, during the pre-season, training is regularly carried out after a match under fatigued conditions.

The weekly dynamics of the training content remain stable in terms of the type of load, volume, intensity, and complexity. (1,2,3) Due to this cyclical nature, each training week shows only subtle tactical differences, while the physical objectives are stabilised. Table 1 shows an overview of a typical training week with one game. To avoid overtraining, recovery during the week takes place by varying the dominant pattern of muscle contraction (strength, endurance, or speed). As a result, no consecutive days have the same objective to ensure the cumulative effect of fatigue is limited. (1,3) Therefore, the complex game is broken down into daily objectives to maintain an optimal performance level. The distribution of the different variables that determine the training content, also known as Key Performance Indicators (KPIs), is always organised in relation to both the previous and upcoming match. When planning the week, the complexity of the training is therefore also considered. Especially the mental load plays an important role here. Not only the body, but the brain needs space and time to recover too. Processing information quickly and making choices under time pressure results in cognitive overload. For example, football is generally experienced as more intensive than isolated running, because high-intensity actions such as dribbling, duelling, shooting and tackling follow each other in quick succession. During

the week, a training session (or match) with a lot of variation and information to process will rarely be followed by another training session with complex exercises. After a match or day off, main principles are trained that are an integral part of the game model (= low complexity). Towards the next match more focus is placed on tactical and positional details, taking into account the strategy of the upcoming opponent. The complexity will therefore increase. This does not mean that isolated forms of training are not used at all. For example, players with less physical load during the week are compensated two days before the match (MD-2) by means of isolated running drills. Furthermore, these are also used for substitutes immediately after a match (MD) if no group training or (practice) match is scheduled the following day (MD+1). Although these are tailored to the conditioning status of each player, they have a lower specificity due to the predictable nature of the exercise. While this approach may differ from what's been described above, this shows that, on occasion we might need to be flexible in our approach depending on the context. Thinking in terms of opportunities and possibilities to offer each player an optimal training week might deserve more attention in the future. Think for example of a training immediately after the game or a different weekly schedule for substitutes.

The art and science of coaching

There is no one-size-fits-all solution for an optimal training week. Every player has his or her own way of playing at a similar position, which results in a different load. In addition, no two players react in the same way to a certain imposed load because each individual has a different load capacity. For example, a player in his thirties may need more time to recover while the same may



be true for a youth player who has only recently been added to the squad and may be exposed to cognitive and physical overload.

Finding the right balance within a group of players with different backgrounds and histories (e.g., injury history, number of years first team experience, etc.) requires an individual approach within the team periodisation. Each player is assigned to one of three load capacity groups (low, medium and high) based on both objective (e.g., scores on test programs and/or particulars from sports medical examinations) and subjective criteria (e.g., mental overload for a player who comes from youth training or abroad).

Furthermore, the match schedule in modern football is such that players often have to play multiple matches in a short period of time, with minimal recovery-periods in between. Due to mechanical, metabolic, and cognitive demands the resulting fatigue persists into the following days. The cause is usually

attributed to both central and peripheral factors. (4) After heavy exercise, the ability of the central nervous system to activate or control muscles is reduced. Also, muscle fibre recruitment will be reduced due to disturbances in the contractile function of muscles. Recent research has shown that these reduced functions persist up to 72 hours post-match. The same applies to subjective indicators of fatigue. Both the feeling of fatigue and the psychological lack of motivation to train persist until 72 hours afterwards (see Table 1). The divergent recovery between the perception of fatigue and objective measurements of neuromuscular function highlights the multifactorial nature of fatigue.

To design individualised training programmes, total distance (see box) is probably the most widely used load indicator in professional football. However, it does not appear to be sensitive enough and, to date, has not been associated with fatigue-related markers (4). Hader and colleagues concluded in a systematic review that the distance ran at high speed (> 19.8 km/h) is the only variable that correlates with markers of muscle damage and peak power output from muscle fibres. This Very-High Intensity Distance (VHID) could explain up to 50% of the creatine kinase (CK) concentration and neuromuscular (peak power output) responses. In practical terms, for every 100 metres of VHID, the intracellular CK concentration in muscle fibres increases by 30%, whereas the peak power output during a counter movement jump (CMJ) decreases by 0.5% up to 24 hours post-match. Other significant relationships between external load and fatigue-related variables remain to be determined (5). Empirical evidence shows that an increase in the number of accelerations and

	Recovery			Loading			Tapering	
	MD+1 (starters)	MD+1 (subs)	MD+2	MD-4	MD-3	MD-2	MD-1	MD
Dimensions	1/3 pitch	2/3 pitch Full pitch		2/3 pitch 1/2 pitch	Full pitch	2/3 pitch Full pitch	1/2 pitch	
Relative field size	N/A	Medium Sized Games (5v5-7v7+GK) 125 - 200m2/field player		Medium Sized Games (5v5-7v7+GK) 125 - 200m2/field player	Large Sized Games (8v8-10v10+GK) ≥ 200m2/field player	Large Sized Games (tactical) Small Sized Games (1v1-4v4+GK) ≤ 125m2/field player	Medium Sized Games (maximal 5v5+GK) or Small Sized Games (1v1-4v4+K) ≤ 125m2/field player	
Strength - density	-/+	+++		+++	++	+(++)	+/-	+++
Duration - volume	---	++		+	+++	++	-	+++
Speed - intensity	---	++		+	++	+++	+/-	+++
	(Z4 // -20 km/h)	(Z5 // 20-25 km/h)		(Z5 // 20-25 km/h)	(Z5-Z6 // 20-25+ km/h)	(Z6 // 25+ km/h)	(high intensity/low volume)	
Physical goal	Recovery	Compensate	Off	Strength	Duration	Speed	Activate	Max effort
Key Performance Indicators (KPI's)	High Intensity Distance (HID) (14.4 - 19.7 km/h)	Very High Intensity Distance (> 19.8 km/h) Accelerations Decelerations		Accelerations Decelerations Explosive distance	Total distance Very High Intensity Distance (> 19.8 km/h)	Maximal speed Sprint entries (> 25.1 km/h) Compensate	Taper Post Activation Potentiation (PAP)	
% KPI	30%	60%		60%	75%	60%	30%	100%
Estimated recovery (% KPI * 72h)	21.6 h	43.2 h		43.2 h	54 h	43.2 h	21.6 h	72 h
Complexity (cognitive)	- (minimal) Main principles Predictable drills (i.e., passing & kicking)	++ (average) Main principles Sub-principles (tactical/positional details, some flexibility can be allowed to adapt to an opponent)		+ (low) Main principles (normally don't change from game-to-game, maintaining the team's identity)	+++ (high) Sub(-sub)-principles (tactical/positional details, even more flexible to a specific opponent)	++ (average) Sub(-sub)-principles (tactical/positional details, even more flexible to a specific opponent)	+/- (high/low) Main principles Strategic principles (low volume)	+++ (maximal)
Pre-activation / Warming-up	Mobility Injury prevention (eccentric)	(Postural) stability Injury prevention (eccentric)		Multidirectional Anterior chain	Absolute speed Posterior chain	Coordination Plyometrics Speed	Own preferences	
Strength training	Upper body + prevention	Upper & lower body + prevention		Lower body Max strength	Optional Individual focus	Full Body Strength-speed & power		

Table 1: Weekly structure of the micro cycle

decelerations causes an increased score on muscle soreness and consequently a decreased sense of recovery. It is possible that structural damage at the muscle level also plays a role in this.

Conclusion

There are many different models, but they all have the same goal, which is to optimally prepare players for playing matches. Tactical periodisation is increasingly recognised as an alternative approach to traditional periodisation models. The holistic interplay of all the key training factors (i.e., tactical, technical, physical and mental) means that exercises are chosen that fit the coach's game model, while also incorporating the other aspects (technical, physical and mental) in order to train as match-specific as possible.

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TABLE 1 | Perceptual responses measured via visual analog scales (mm) pre-, post-, and 24, 48, and 72 h post- competitive soccer match-play (n = 16).

	Pre-	Post-	24 h	48 h	72 h
Fatigue	1.09 ± 0.97	7.31 ± 1.68***	6.17 ± 1.60***	4.18 ± 1.66***	2.60 ± 1.67**
Soreness	1.72 ± 1.67	7.05 ± 1.60***	6.48 ± 1.73***	5.03 ± 1.56***	2.33 ± 1.32
Motivated to train	6.89 ± 1.76	2.99 ± 2.58***	5.16 ± 2.45***	5.44 ± 2.16**	6.06 ± 1.84*
Anger	0.63 ± 0.86	1.45 ± 1.67	0.51 ± 0.64	1.24 ± 2.05	0.54 ± 0.67
Confusion	0.51 ± 0.69	0.75 ± 0.79	0.45 ± 0.55	0.44 ± 0.47	0.56 ± 0.62
Depression	0.34 ± 0.44	0.72 ± 1.46	0.44 ± 0.56	0.45 ± 0.52	0.53 ± 0.69
Tension	1.00 ± 1.13	3.84 ± 3.18**	2.53 ± 2.29**	2.76 ± 1.97***	1.74 ± 1.48
Alertness	6.25 ± 2.39	4.56 ± 2.65*	5.78 ± 2.30	5.61 ± 1.89	5.71 ± 2.29
Confidence	6.99 ± 1.84	6.89 ± 2.72	6.95 ± 2.39	6.98 ± 2.05	7.27 ± 2.16
Sleep	5.83 ± 2.02	N/A	6.77 ± 2.22	5.73 ± 1.63	5.79 ± 2.48
Post warm-up readiness to train	7.69 ± 1.97	N/A	5.17 ± 3.19*	6.76 ± 2.69	6.98 ± 2.99

Values are mean ± SD. Significant differences in comparison with baseline indicated by *p < 0.05, **p < 0.01 and ***p < 0.001.

Figure 2: Perceptual responses measured before, after, and 24, 48, and 72 hours post-match (4).