Sprinting in football has been a big debate between coaches and sport scientists. Exposing their players to high velocities is an issue that a lot of coaches seem to be avoiding in their training sessions. Can sprinting activity in training improve performance, or is it too big of a big risk and should be avoided?

Taking everything from the beginning: What are the physical demands of a 90min game? If we try to monitor player performance at an elite level, we will find that a football player covers distances between 10-12km (depending from their position) with the majority of that being in low intensity (Di Salvo et al, 2010). In the span of the distance covered, we have activities like tackles, headings, changes of direction and high intensity running of which sprinting constitutes the 1-11% with 10-20 sprints (>25.2 km/h) (Stolen et al, 2005; Di Salvo et al 2010; Haugen et al 2014).

Modern soccer requires fine planning and solid preparation. The increasing demands of play lead sports practitioners to design weekly training plans paying great attention to detail in preparing their players for what we call a “worst case scenario”. Therefore, preparing football players for the aforementioned 1-11% of the game is crucially important. One offensive or defensive sprint can make volumes of difference in a game. Tony Strudwich (Man Utd, Head of Performance,) in a recent presentation referred to “critical moments” as preparation for the most intense phase of their sport; 10m maximal burst (acceleration), high speed training (max speed), train quick, make athletes hard to break, build resilience through volume and ensure athletes can cope with these demands.

IMPORTANT DETAILS

• Research has shown that High-Speed Running and sprinting vary from match to match depending on the player’s position, playing style and match score (Gregson et al, 2010 Mendez-Villabueva et al, 2011; Mendez-Villabueva et al, 2013; Al Haddad et al, 2015). Therefore, coaches and sport scientists should be very careful in interpreting data and designing their training sessions. Physical and Tactical elements should be prioritized according to team and player needs.

• During a 90min game players can achieve very high sprinting speeds (ie, ~85-94% of maximal sprinting speed) regardless of age or playing position and that faster players are likely to reach greater absolute speed during the games than their slower teammates (Villanueva et al, 2011).

• Among all physical puzzle pieces, sprinting speed is essential for players’ performance and injury prevention as well (Buchheit, 2016). Sprinting speed can be differentiated into acceleration (10m) and maximal sprinting speed or peak velocity (20-40m). Training-wise these two components should train independently as not all max accelerations lead to max speed (Haugen et al, 2014; Al Haddad et al, 2015).
• Coaches and sport scientists, should use the analysis of their team's match physical demands combined with the tactical aspects, when designing a weekly plan. According to tactical periodization (graph 1) and the principle of horizontal alternation in specificity, everyday (acquisition days) has to focus on a different physical fitness component (Recovery, Strength, Endurance, Speed). Therefore, on a Speed day we should expose our players to max velocities that are required in the game.

• In modern training planning, it does not make sense working traditional blocks with different physical aspects (aerobic capacity - aerobic power - anaerobic capacity - anaerobic power etc). Big clubs spend 2-3 weeks pre-season doing friendly games in different places around the world. After the first week (adaptation), according to the tactical periodization we can work all fitness components in relation to a) the team needs (tactical) and b) the level of complexity. Therefore, players should be exposed to high velocities early, in order to be prepared for what will happen in a friendly or official game.

• Improvements in sprinting velocity during youth occur due to growth and maturation (Al Haddad et al, 2015; Moran et al, 2017). Therefore, we should be careful when interpreting the data as we may have late or early mature players. Suggested max speed training for youth is twice per week with 16 sprints of around 20m, with work to rest ratio of 1:25 or greater than 90sec (Moran et al, 2017).

Graph 1, Tactical Periodisation weekly plan (Villanueva & Delgado, 2012).
TRAINING METHODOLOGY

Professional football requires the individualization of high speed running zones. The large variation between players in the same team (faster, slower etc) makes the use of absolute thresholds difficult. Consequently, assessing players’ locomotor profile and using relative external load can keep us from misleading the data we get from players’ performance and from acute to chronic ratio comparisons (Buchheit, 2016).

Profiling a football player is necessary not only for performance purposes but for injury prevention as well. We have to monitor our players’ progress relatively to themselves and to their readiness at that moment. In terms of how we can get our players’ max speed there are two ways. First we can do a 40m sprint test getting the max speed (Mendez-Villabueva et al, 2013) or (be aware of the reliability and validity) to use the max speed we get from our GPS software during our training sessions.

The training methods that can be used for max speed training are:

a) Isolated, sprinting activity without ball, including different starting options (flying start, side move, reaction). In this part, we could add running mechanics that are targeting running efficiency and are drills mostly in a straight line, resistance training and plyometric training (Al Haddad et al, 2015).

b) Football related, sprinting activity through football-specific drills like running, cutting, shooting and possession games. The purpose of that category is to achieve max speed though the 4 moments of the game (especially through transitions).

c) Tactical related, sprinting activity though the team’s game model and system of play. Combination play and position-specific drills using full pitch width and at least half of the pitch length.
**Practical Applications**

- Train for the "worst case scenario"
- According to tactical periodization, every day (acquisition days) has to focus on different physical fitness components (Recovery, Strength, Endurance, Speed)
- At least once per week we expose our players to peak velocities
- Assess your players’ max speed through testing or daily GPS monitoring
- Use one or a combination of the 3 training methods (Isolated, Football related, Tactical related)

**So, the answer is: YES we sprint!!**

**REFERENCES**


