

CHAPTER 1

DISTANCE AND INTENSITY OF RUNNING IN FOOTBALL

CHANGES OF DIRECTION (COD)

Analysis of competitive matches has shown the intermittent (stop and start) nature of the sport, and subsequently the need for players to repeat high-intensity exercises (Bangsbo, 2007; Dellal et al., 2012). Recent studies have estimated that **between 1000 and 1500 distinct movement changes occur within each match at a rate of 5-6 seconds whilst having a static pause of 3 seconds every 2 minutes** (Reilly, 2003; Strudwick et al., 2002).

Previous research has shown how players make various accelerations, straight-line, backward and sideways movements throughout the course of a game (Bloomfield et al., 2007), however, early research conducted by Reilly and Bowen, (1984) indicated how these unorthodox movements led to significant increases in exertion when compared to running forwards.

These findings have been further confirmed through recent research comparing the physiologic responses of traditional high-intensity straight-line running intermittent exercise with shuttle-running requiring 180° directional changes (Dellal et al., 2010). It was concluded that the physiological impact of directional changes required a significant increase in the **anaerobic metabolism** (see definition on key terms page) when compared to straight line running.

The results from both of these studies may aid coaches in the design of intermittent (stop-start) training programmes using classical straight-line and changes of direction to get different physiologic responses. This is where you can use small sided games as a way of having more **CODs** and subsequent increases in the **anaerobic metabolism** of players through specific training as opposed to traditional interval training.

When discussing **CODs** further within elite level matches, Bloomfield et al., (2007) concluded the following:

- Midfielders were found to perform more forward movements than defenders who had the highest amount of backwards and sideways movements.
- The majority of diagonal and curved movements were performed by midfielders and strikers (in order to create space, evade a marker or be in a position to receive a pass from a teammate). From a striker's perspective these arching runs also give them the opportunity to stay 'onside' when running in behind the opposition's defence.
- High numbers of turns were made with the majority between 0° to 90°.
- Defenders made approximately 700 turns per match.
- Midfielders made approximately 500 turns per match.
- Strikers made approximately 600 turns per match and made the most turns between 270° and 360°. These turns may be in order to evade a marker or through general play, making movements towards the ball when it was played overhead (e.g. from a goal kick).
- The amount of 90° to 180° turns is relatively even with all positions performing approximately 90-100 in a match.



KEY POINT:

These specific turning exertions and accelerations/decelerations should be included as part of conditioning sessions to maximise the performance for these specific movements. The inclusion of these movements at game intensity within small sided games or general conditioning can significantly enhance 'football specific strength' capacity of players.

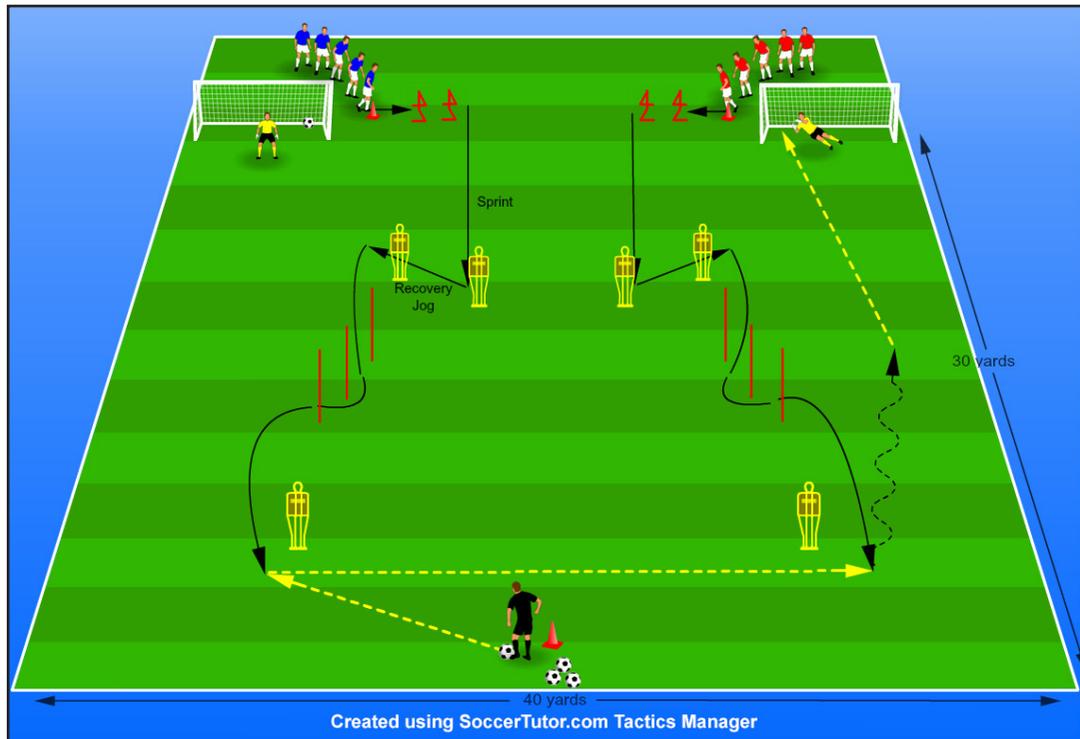
In addition to the previous research highlighting directional changes within the varying work-rate profiles of elite level players, Orendurff et al., (2010) concluded that within competitive matches:

- 43% of movements lasted less than 6 seconds
- 23% of movements lasted 6-9 seconds
- 13% of movements lasted 9-12 seconds
- 9% of movements lasted 12-15 seconds
- 53% of recovery periods are less than 6 seconds
- 22% of recovery periods last 6-9 seconds
- 9% of recovery periods last 9-12 seconds
- 5% of recovery periods last 12-15 seconds

Further analysis into movement changes within elite professional football also suggested that players perform between 1000 to 1400 short duration actions in a game, lasting 2-4 seconds (Stolen et al, 2005), with approximately 220 of them being at a high intensity (Mohr, 2003). Bangsbo (1994), suggested that players perform a different action every 4-6 seconds throughout a competitive match.



PRACTICE EXAMPLE: Changing Direction at Speed and Finishing



Objective

To develop explosive power, reaction speed, acceleration and football specific conditioning.

Description

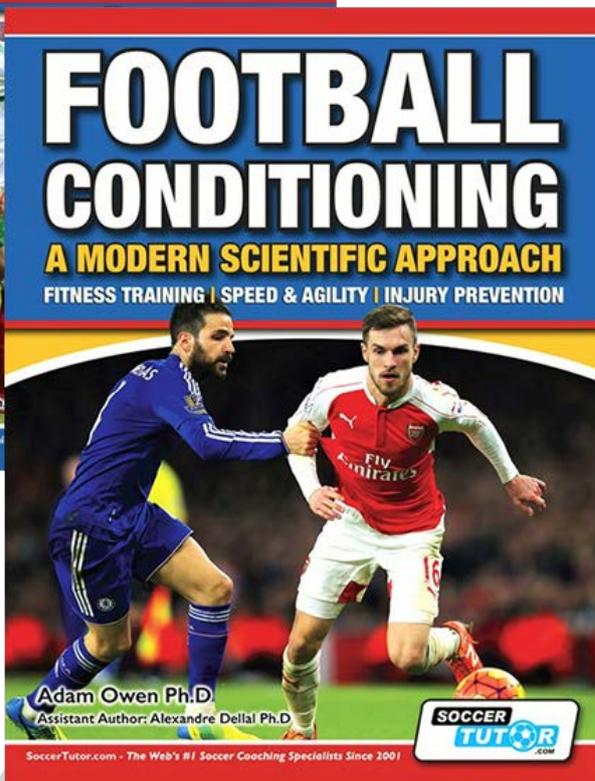
In a 40 x 30 yard area, we mark out the hurdles, mannequins and cones in the positions shown. Players perform various explosive movements before shooting at goal.

The players are in 2 groups facing each other and start by jumping over the 2 hurdles. They then accelerate to touch the first mannequin, jog (recovery) around the second mannequin and perform diagonal explosive movements through the poles. The coach plays a pass to one of the players who must react quickly to meet the ball, receive and pass the ball across to the player on the other side. The second player receives with an open body shape, dribbles at maximum speed and shoots. Players then walk to the back of the opposite group.

Progression: The player who makes the pass across moves to apply pressure on the attacker from behind.

Coaching Points

1. Players must accelerate at maximum speed.
2. Players must react to the coach's pass accordingly to maintain the technical quality throughout the drill.
3. Dribbling at maximum speed towards goal is required to make it more game realistic.



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