

Heart Rate and Motion Analysis by GPS in Beach Soccer

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ABSTRACT

Although beach soccer has become increasingly popular in recent years very little scientific research has been conducted into the sport. A pilot study was carried out with the aim of examining the physiological (heart rate) and physical (motion analysis) responses of beach soccer players during competitive matches. Ten players (age 25.5 ± 0.5 years; height 1.80 ± 0.08 m; weight 78.2 ± 5.6 kg.) were studied over five beach soccer matches. The physiological demands were analysed by measuring heart rate (HR) using telemetric devices, while the physical profile was evaluated by recording motion and speed by means of GPS devices. During competitive matches, players obtained a HR_{mean} of 165.2 bpm ($86.5\% HR_{\text{max}}$), with 59.3% of the time participating (TP) corresponding to values above 90% of the HR_{max} . The distance covered per minute of participation was 97.7 m, with 9.5% of this distance corresponding to high-intensity running and 2.5% to sprint; the work:rest ratio was 1.4:1 and the maximum speed $21.7 \text{ km}\cdot\text{h}^{-1}$. These results showed that beach soccer is an intermittent physical activity of greater intensity than other team games. It requires a major contribution from the anaerobic system as emphasis is placed on players making quick bursts of high-intensity activity separated by brief rest periods.

Key words: Match, beach soccer, performance, motion analysis, heart rate.

Key Points

- The distance covered per minute of play is around 100 m.
- Beach soccer is an intermittent sport with a work:rest ratio of 1.4:1.

- The playing surface in beach soccer is an important handicap to obtain maximum speeds.
- Beach soccer has a high physiological intensity, with more than half of the game is spent at intensities above 90 % of the HR.

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