

# Professional Game Heading in Training Guidance

## FAQ



Heading in training guidance for professional football has been agreed ahead of the 2021/22 season for use by clubs in the Premier League, EFL, Barclay's Women's Super League (WSL), FA Women's Championship, the National League System from Steps 1 to 4 and the England national teams.

This initial guidance has been developed following multiple research projects that were undertaken over recent months on behalf of a subgroup of the Professional Football Negotiating and Consultative Committee (PFNCC).

The new heading guidance, which is specifically for training sessions, has been designed to meet the requirements of each level of the English football pyramid.

### **Why has the guidance been developed?**

The Premier League and football partners' focus is to make the game as safe as possible for all players. While research continues, with players' welfare paramount, it is right that measures are put in place that may mitigate the risk of head injuries.

The development of heading guidance is part of the Premier League's Head Injury action plan - part of the League's commitment to head injury care for players.

### **Who has been involved in developing the guidance?**

The Professional Football Negotiating and Consultative Committee (PFNCC) formed a cross-game Heading Working Group, which included representatives from the Premier League, The FA, EFL, WSL, PFA and LMA. The group consulted with players and managers as well as leading medical experts and club doctors.

### **What did the research include?**

An independent systematic review was conducted of existing published research on the measurement of acceleration, force, nature, and frequency of heading in adult football – which found limited definitive evidence and requires further exploration.

A second study involved a cohort of players from Liverpool FC's U23 and U18s, and Manchester City's U18s and women's teams. The study was conducted with sports welfare technology company Sports & Wellbeing Analytics (SWA). Players were provided with PROTECHT mouthguards, which measured the acceleration involved in headers taking place during training sessions. The equipment is fitted with sensors to provide precise measurements with the data then independently verified.

A third study was conducted in partnership with Second Spectrum, the official tracking and analytics provider for the Premier League. This study reviewed every header taking place in Premier League matches during season 2019/20, using video analysis to calculate the forces involved.

Finally, Opta data was interrogated to quantify heading in matches across the Premier League, EFL and WSL. A descriptive analysis was provided over multiple seasons relative to league and playing position.

### **What were the findings of the research?**

The studies provided preliminary data on the forces involved in heading a football and enabled headers to be grouped based on the preceding event, for example; headers from crosses, long balls, passes, throw-ins; and headers from a standing position, running forward or backwards etc. This information was provided to a cross-football working group to help shape the guidelines.

Data demonstrates that central defenders have on average a higher number of headers per match compared to other positions, across all professional football, and the highest average headed forces per match in the Premier League.

The mean acceleration of the headers measured in the PROTECHT study was 16.8 g (linear) and 1,373 rad/s<sup>2</sup> (rotational). Daily activity (running, walking and jumping) values are outlined in the literature to occur below 10 g (Ng et al, 2006). Linear and rotational mean values of 26.6 g and 2,000 rad/s<sup>2</sup> have been observed in other sports.

At present there is a lack of definitive evidence to quantify the influence of age and gender on the transmission of forces attributable to heading in professional football. However, limited early evidence suggested that younger players and women may experience higher forces than older male players, and that neck muscle strength may be one contributing factor to force transmission from heading.

The evidence gathering has increased understanding of the forces involved in heading, while also identifying areas that require further exploration. The Premier League and football partners will deliver additional research in season 2021/22 to further understand heading and to enable the heading in training guidance to be evolved based on an expanded evidence base.

### **What is the heading guidance?**

Based on early findings from the research, which showed the majority of headers involve low forces, the focus is on those headers that involve higher forces, typically those following a long pass (more than 35m) and those from crosses, corners, and free kicks. It has been recommended that a **maximum of 10** higher force headers are carried out in any training week.

Training should be planned to mitigate the quantity and nature of heading practice during the training week. While research is in its infancy there is some limited evidence to suggest the following may be considered:

- Wherever possible limit the number of headers carried out when a player takes more than three steps and runs onto a ball or dives for a ball.
- Practice technique using thrown passes as this leads to lower peak accelerations.

While the focus has been on higher force headers, it is recommended that clubs develop player profiles that consider gender, age, playing position, the number of headers per match and the nature of these headers. These profiles can be used to ensure that all heading training demands reflect the type and quantity of headers that a

player could expect to undertake within a match. Club staff will also be encouraged to work with players following each match to ensure they have adequate time to recover from their heading exposure.

The guidance has been developed using a precautionary approach to protect player welfare where scientific evidence is limited and will be reviewed regularly as research increases understanding.

### **How will players be monitored during training sessions?**

This guidance is provided for education and to assist clubs and players. During training sessions it is essential that club staff monitor each player's heading practice in real time, ensuring that the quantity of headers resulting in higher accelerations is minimised and is commensurate with each player's individualised match play heading profile.

Players are encouraged to familiarise themselves with these guidelines and limit any heading practice taking place outside of club organised sessions.

Players who develop any symptoms of head trauma during heading practice should be removed from training immediately.

Players returning to training following a concussion should not take part in any training that involves heading activity until all other steps in the graded return to training in an enhanced care setting have been satisfied as per the FA Head Injury Guidelines.

Clubs are mandated to record injuries as part of the injury and illness audit. It is expected that clubs will record any symptoms associated with head trauma on a player's medial record.

### **What will the football partners provide to support coaches and managers?**

There are early but limited indications that neck and upper torso strength may play a role in the forces involved in heading. An advisory group has, therefore, been established which will provide guidance on strengthening exercises that can be carried out. This guidance will be available by 1 September 2021.

Guidance will also be provided to provide ideas as to how to adapt practices to ensure technique and key match actions can be practiced whilst reducing the forces involved for players.

### **Is the guidance different in the grassroots game?**

The FA has produced guidance for adult amateur grassroots football, which includes clubs up to and including Step 5 of the National League System and Tier 3 of the women's football pyramid.

Guidance has also been updated for youth football.

You can find this guidance by [clicking here](#).

### **What are the next steps? Will the guidance change in the future?**

Further research will take place during the 2021/22 season, and this will inform a formal review will take place by the PFNCC in June 2022 to consider any new evidence resulting from additional research.