Plan Overview

A Data Management Plan created using DMPonline

Title: The impact of ball pressure on cognition within current IFAB guidelines

Creator: Daniel Walker

Principal Investigator: Dr Daniel Walker

Data Manager: Dr Daniel Walker

Project Administrator: Dr Daniel Walker

Affiliation: University of Bradford

Template: DCC Template

ORCID iD: 0000-0002-9369-6953

Project abstract:

Background: Football is the world's most popular sport with over 265 million players, in FIFA's last census-style report in 2007 (FIFA, 2007). In England 11.8 million players participate in organised football matches and training each week (English Football Association, 2024). While regular participation in sport and physical activity has many benefits for health and well-being (Blair & Morris; 2009; Callow et al., 2020; Saxena et al., 2005), there is increasing public concern and research scrutiny regarding the long-term negative consequences of repeated ball-to-head impacts, an integral skill in football known as heading (Peek et al., 2023).

To minimise the potential long-term harm associated with heading, a small number of football associations around the world have implemented Heading Guidelines. However, the evidence underpinning the strategies contained within these guidelines is unclear. Additionally, most football associations globally currently do not endorse a position on heading including the sport's governing body, FIFA. This presents a perfect opportunity to explore the safest possible manner of heading within football's lawmakers IFAB's current laws.

Aim: We aim to test 179 footballers (male and female) to determine whether the current boundaries of ball pressure are harmful to footballers when heading. This study could provide evidence for reducing the upper boundary, as well as identifying that these boundaries may be different in the men's and women's games.

Methods: An experimental design will be implemented in this study. 179 footballers (both male and female) are targeted and will be randomly allocated to one of two conditions; i) heading the 9psi football ii) heading the 15psi football. Prior to the experiment, participants will complete a questionnaire that collects participant demographics and a Trail-Making Task (TMT(1)) that will record baseline data of cognitive flexibility. Next, participants will head the football back to the researcher ten times from an under-arm throw before immediately completing the TMT again (TMT(2)). The participant will then head the ball back to the

researcher a further ten times from an over-arm throw before again completing the TMT (TMT(3)). Finally, participants will complete a questionnaire that will ask questions regarding the ball they have headed in the experiment.

Analysis: A 2x3 MANCOVA will be used to analyse the data, where there are two levels of the independent variable (ball pressure, 9psi vs 15 psi) and three levels of the dependent variable (cognitive flexibility, TMT(1), TMT(2), TMT(3)), with biological sex (male/female) as a covariate.

Impact: From this study, we can provide evidence that we may need to reduce the guidelines on pressure of the ball, perhaps closing the gap a little closer to the lower bound. If we find a difference between the sexes, it may be that we can provide suggestions of different pressured balls between the men’s and women’s games, to ensure safety for all.

ID: 145202

Start date: 01-06-2024

End date: 31-05-2025

Last modified: 04-03-2024

Copyright information:

The above plan creator(s) have agreed that others may use as much of the text of this plan as they would like in their own plans, and customise it as necessary. You do not need to credit the creator(s) as the source of the language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

The impact of ball pressure on cognition within current IFAB guidelines

Data Collection

What data will you collect or create?

In this study, data that will be obtained are as follows:

- Trail Making Task
  - Accuracy
  - Reaction Times
- General Questionnaire
  - Demographic variables (sex, age etc.)
- Football Questionnaire
  - Qualitative data on their thoughts on the football they have just headed

How will the data be collected or created?

Data will be obtained through completing the questionnaires on JISC on a tablet.

Documentation and Metadata

What documentation and metadata will accompany the data?

I will supply a glossary and instructions on how to use and interpret the data alongside the dataset when uploading to Open Science Framework.

Ethics and Legal Compliance

How will you manage any ethical issues?

Participant data will remain confidential and will be stored safely in the researcher's OneDrive in a password protected folder. Participant data will also be identified using a code that the participants create themselves. Only the participant and researcher will be aware of these codes.

How will you manage copyright and Intellectual Property Rights (IPR) issues?

The data will be the intellectual property of both the University of Bradford and UEFA.

Storage and Backup

How will the data be stored and backed up during the research?

The data will be stored safely on the researchers university OneDrive account.

How will you manage access and security?

Only the researcher and research assistant will have access to the data and this will be behind a password protected folder.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

This data will have strong implications for the pressure of the football from grassroots to the elite level. Therefore, the data should be retained and preserved so it is useable in subsequent studies as secondary data.

What is the long-term preservation plan for the dataset?

This data will be available on Open Science Framework, where researchers will have access to it.

Data Sharing

How will you share the data?

This data will be available on Open Science Framework, where researchers will have access to it.

Are any restrictions on data sharing required?

n/a

Responsibilities and Resources

Who will be responsible for data management?

Myself and the research assistant.

What resources will you require to deliver your plan?

n/a

Planned Research Outputs

Book chapter - "The impact of ball pressure on cognition within current IFAB guidelines"

Background: Football is the world's most popular sport with over 265 million players, in FIFA's last census-style report in 2007 (FIFA, 2007). In England 11.8 million players participate in organised football matches and training each week (English Football Association, 2024). While regular participation in sport and physical activity has many benefits for health and well-being (Blair & Morris; 2009; Callow et al., 2020; Saxena et al., 2005), there is increasing public concern and research scrutiny regarding the long-term negative consequences of repeated ball-to-head impacts, an integral skill in football known as heading (Peek et al., 2023).

To minimise the potential long-term harm associated with heading, a small number of football associations around the world have implemented Heading Guidelines. However, the evidence underpinning the strategies contained within these guidelines is unclear. Additionally, most football associations globally currently do not endorse a position on heading including the sport's governing body, FIFA. This presents a perfect opportunity to explore the safest possible manner of heading within football's lawmakers IFAB's current laws.

Aim: We aim to test 179 footballers (male and female) to determine whether the current boundaries of ball pressure are harmful to footballers when heading. This study could provide evidence for reducing the upper boundary, as well as identifying that these boundaries may be different in the men's and women's games.

Methods: An experimental design will be implemented in this study.179 footballers (both male and female) are targeted and will be randomly allocated to one of two conditions; i) heading the 9psi football ii) heading the 15psi football. Prior to the experiment, participants will complete a questionnaire that collects participant demographics and a Trail-Making Task (TMT(1)) that will record baseline data of cognitive flexibility. Next, participants will head the football back to the researcher ten times from an under-arm throw before immediately completing the TMT again (TMT(2)). The participant will then head the ball back to the researcher a further ten times from an over-arm throw before again completing the TMT (TMT(3)). Finally, participants will complete a questionnaire that will ask questions regarding the ball they have headed in the experiment.

Analysis: A 2x3 MANCOVA will be used to analyse the data, where there are two levels of the independent variable (ball pressure, 9psi vs 15 psi) and three levels of the dependent variable (cognitive flexibility, TMT(1), TMT(2), TMT(3)), with biological sex (male/female) as a covariate.

Impact: From this study, we can provide evidence that we may need to reduce the guidelines on pressure of the ball,perhaps closing the gap a little closer to the lower bound. If we find a difference between the sexes, it may be that we can provide suggestions of different pressured balls between the men's and women's games, to ensure safety for all.

Planned research output details

Title	DOI	Type	Release date	Access level	Repository(ies)	File size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
The impact of ball pressure on cognition within cu ...		Book chapter	Unspecified	Open	None specified		None specified	None specified	No	No