

PART 2: INCREASING COACH 'BUY-IN' WITH GOOD DATA VISUALISATION

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As we have seen in part 1, we believe that practitioners with a clear vision of the framework to develop and improve the models used to analyse training loads will be able to gain better insight into players' fitness, readiness to perform and fatigue.

However, as human beings, the amount of information we receive every day has risen drastically in recent years, while the time allocated to analyses has decreased. This is particularly true for football coaches.

As such, data needs to be provided to decision-makers in an easily accessible and engaging format. While optimised models are important in themselves, they are useless if the information does not make it to the people who make the decisions¹. In this second part, we will provide some guidance on how to improve data visualisation and increase coaching staff 'buy-in', which may, in turn, improve their ability to make informed decisions.

DATA VISUALISATION

In most elite sports/football clubs, the sport science department supports the coaching staff/performance manager, but it is the coach(es) who dictates the training programme and, therefore, a large part of the training load². Effective communication to increase coach buy-in is now one of the more (if not the most!) important soft skills to develop for sport scientists working in an elite set-up³. Today, coaches and

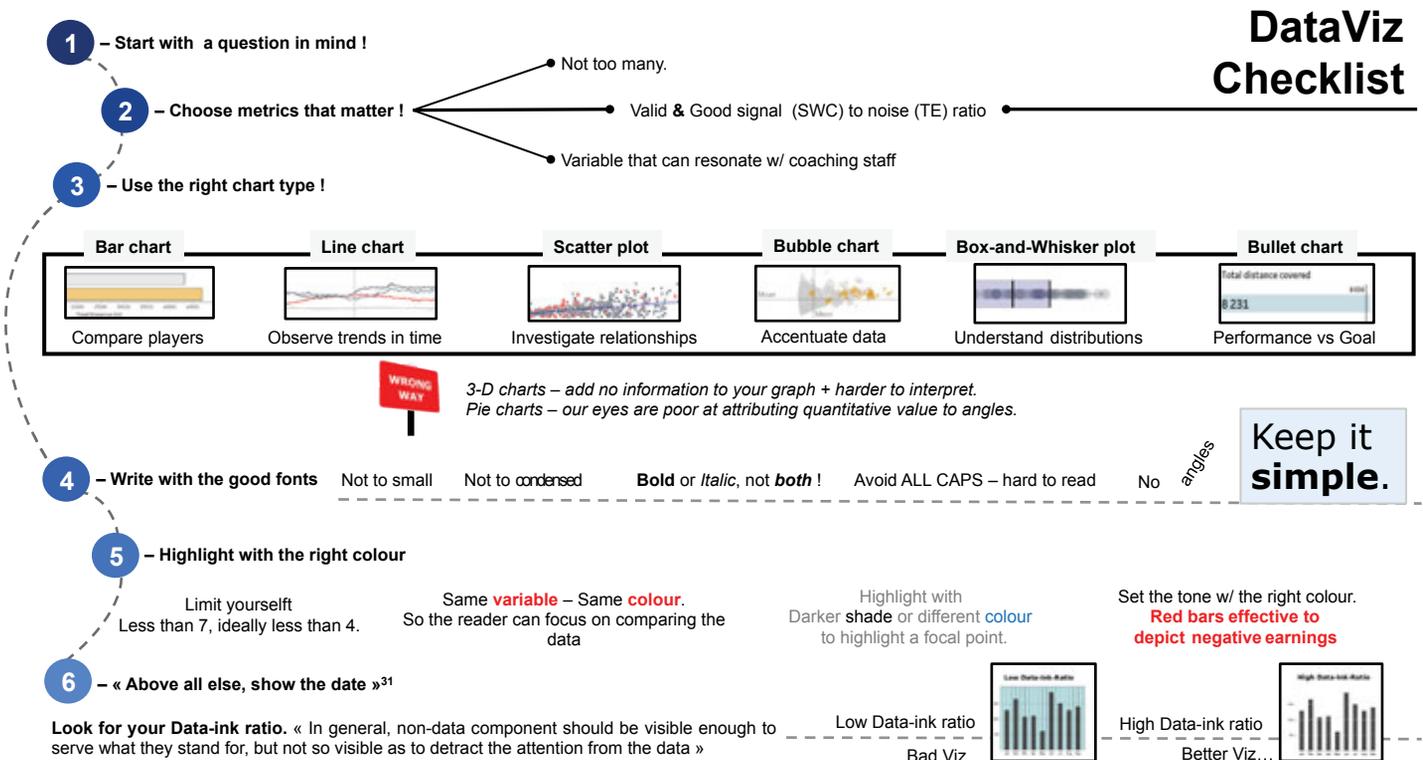


Figure 1: DataViz CheckList – inspired by Tuft⁴ and Hardin et al⁵.

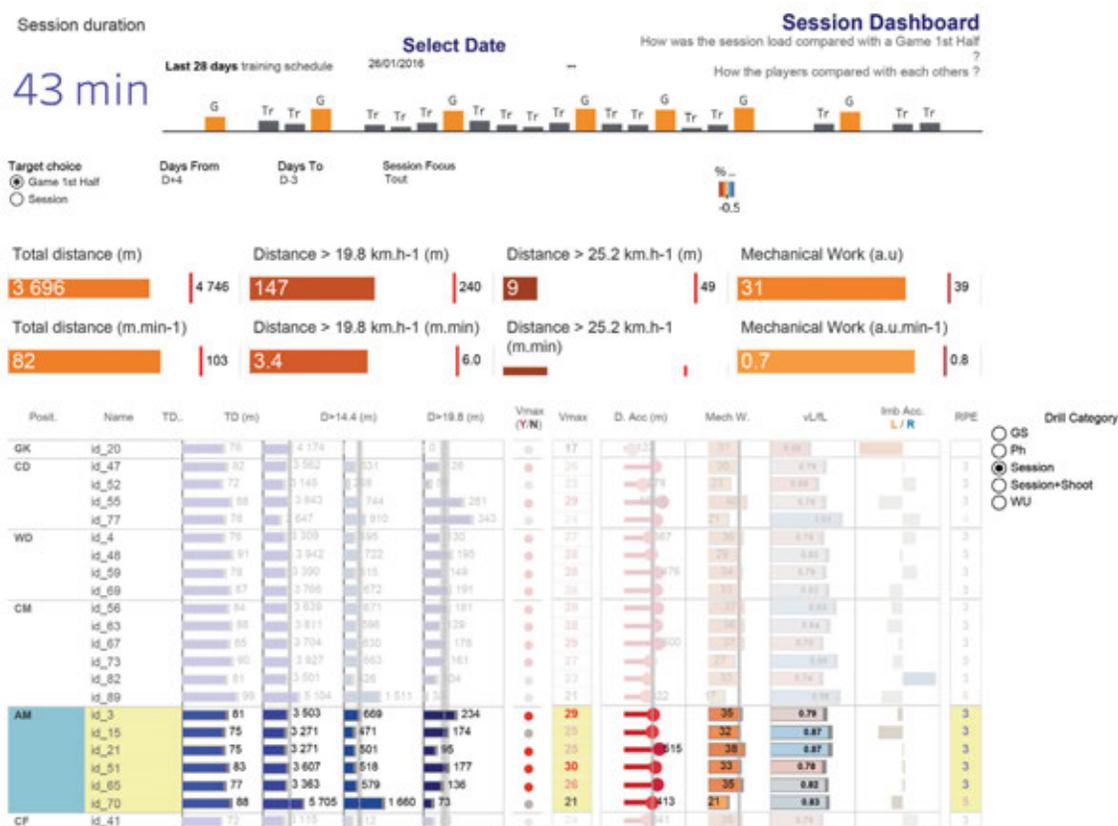


Figure 2: Example of a session dashboard presenting session training load.

Upper panel: training schedule during the last 28 days. Grey bars=training sessions; orange bars=games. Middle panel: bullet chart reporting key session metrics (white number) compared with target (similar session or mean game 1st half) values (red bar and black number). Lower panel: grey line and zone=mean \pm 95%CI. White tooltip=player name, position variable value of the bar selected and ranking in the selected group. Data for AM positional group, darker and brighter=data highlighted by the practitioner. Created in Tableau 10.2.

performance managers are required to dedicate time to players' demands, media requests and sponsors – highlighting the importance of time-efficient practices when preparing and debriefing sessions and/or the training plan. As a result, it is not feasible for most decision-makers to spend more than 3 to 5 minutes reading reports. Feedback, therefore, has to be accurate, straight-to-the-point and delivered in a timely manner.

With the rise of data visualisation tools (e.g. Tableau Software®, Microsoft Power BI®, Qlik® to cite a few), data scientists are now able to display data in a more effective and engaging way for coaches. The road to better reports likely passes first through the basic concepts of powerful and engaging data visualisation (dataviz) and second, the building of interactive dashboards, which help to tell a story. With these advances, the future of athlete monitoring may echo louder into the coaching sphere and potentially aid their decisions.

Concepts of good dataviz

The checklist presented in Figure 1 summarises the different aspects of powerful dataviz.

Build interactive dashboards to tell a story

A dashboard is a visual display of the most important information, consolidated and arranged on one single screen/sheet, which allows the overall picture to be examined at a glance⁶. Dashboards depict indicators using graphics over text, which generally resonates better for busy staff not used to scientific data⁷.

For this reason, it may be the time to move away from 'multipage-data' reports (on paper) to 'single-page engaging, question-based' dashboards (on a tablet or computer screen). While these dashboards are meant to be easy to read, they also offer users the ability to explore the data at a glance with more interaction. With a dashboard, the coaching staff can interact with the data by filtering or highlighting content (Figure 2).

Filtering

Filters allow the performance manager to analyse data from different angles or to dive into a more detailed level of analysis. To avoid confusion, it is always important to guide the user through the filtering process using suggestive sub-heading verbs such as 'Select', 'Click' or 'Choose'. Several examples of

filter options are provided in the dashboard presented (Figure 2):

- The coach/performance manager can **select the date** of interest if he needs to look at another session.
- In the lower panel, if they are interested in looking deeper, the dashboard offers the flexibility to **choose a drill category** and then get full details of that drill.
- When the coach needs to compare the session relative to a game, they can change the **target choice** from 'similar session' to 'game 1st half' (top left-hand corner).
- Lastly, if the coach wants to observe a particular player, a dashboard offers this possibility. By **clicking on the player name** (or positional group) they can get the data in the middle-panel bullet charts and upper-panel training load history to filter relative to this player (or positional group).

Highlighting

Highlighting can quickly show relationships between values in specific areas or categories, even across multiple views. One key advantage of highlighting is that it preserves the context of the

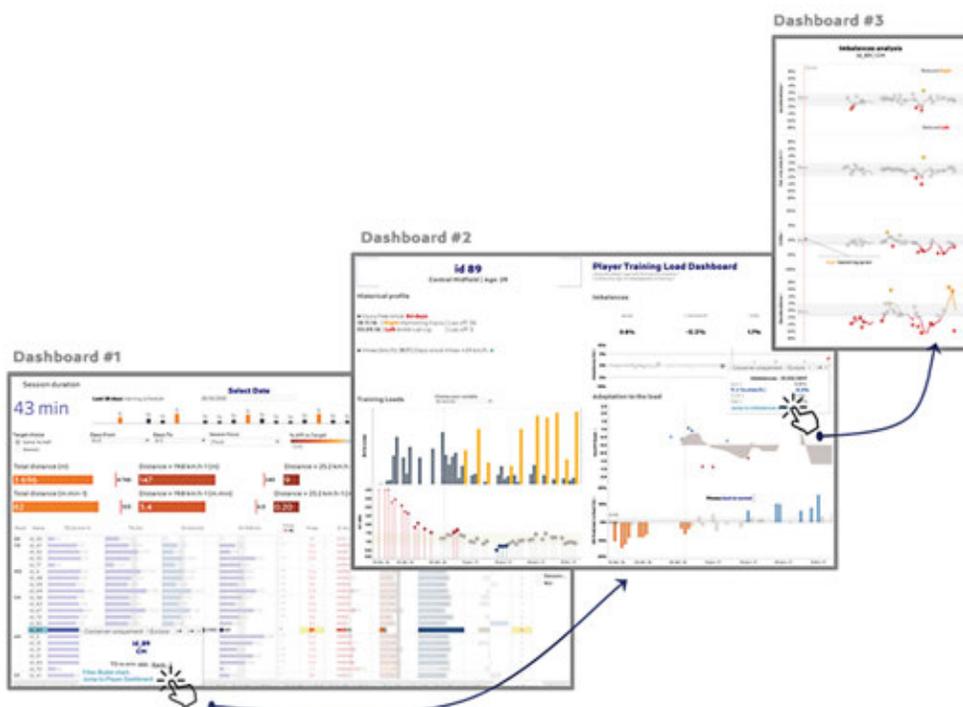


Figure 3: Multiple dashboards connected into a storyboard provide an engaging story for the coaching staff. For example, the performance manager can decide to highlight the session data of a player returning from injury (Dashboard #1). Further, for that specific player, he can gain insight into his individual training load data (Dashboard #2) to access key training load and fitness metrics not provided in Dashboard #1. Finally, the story ends with a specific display of the left-right force load imbalances of that particular player (Dashboard #3).

rest of the points (unlike filtering)⁸. For example, by clicking on a specific player or positional group, the dashboard allows the performance manager to quickly highlight the data of this specific group in the lower panel (Figure 2).

Everyone loves stories, with dashboards and persuasive dataviz, large amounts of data can be turned into an engaging story (Figure 3). By telling the coaching staff a story instead of reporting masses of data, sport scientists will increase coach buy-in. More importantly, stories motivate action. Dataviz and storytelling are likely key aspects in sport scientists' quest to have a clear impact on the training plan in team sports.

CONCLUSION

In this two-part manuscript, we have tried to facilitate the journey of practitioners on the 'road to Rome'. We believe that by mastering the following key elements, sport scientists may improve the quality and efficiency of their support to coaching staff, which should help them to be 'part of the conversation' with decisions-makers:

1. A clear vision of the framework required to develop/optimize/improve the models used to analyse training loads, in order to gain better insight into players' daily fitness, readiness to perform and fatigue.

2. An engaging way to display data to the coaching staff/performance manager that is attractive, efficient and increases interactivity of and 'buy-in' to the use of data.

6. *Few S. Information Dashboard Design, 2nd ed. Boston, Massachusetts: O'Reilly Media 2006.*
7. *Kokina J, Pachamanova D, Corbett A. The role of data visualization and analytics in performance management: guiding entrepreneurial growth decisions. Journal of Accounting Education 2017; 38:50-62.*
8. *Tableau. Visual Analysis best practices. 2016. Available from: <https://www.tableau.com/learn/whitepapers/tableau-visual-guidebook>*

References

1. *Buchheit M. Chasing the 0.2. Int J Sports Physiol Perform 2016; 11:417-8.*
2. *Akenhead R, Nassis GP. Training load and player monitoring in high-level football: current practice and perceptions. Int J Sports Physiol Perform 2016; 11:587-593.*
3. *Buchheit M. Want to see my report, coach? Sport science reporting in the real world. Aspetar Sports Medicine Journal 2017; 6:36-43.*
4. *Tufte E. The Visual Display of Quantitative Information, 2nd ed. Cheshire, Connecticut: Graphics Press 2001.*
5. *Hardin M, Hom D, Perez R, Williams L. Which chart or graph is right for you? Available from: https://www.tableau.com/sites/default/files/media/which_chart_v6_final_opdf.*

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