Microscopes enable us to magnify materials and analyse the composition of their structures on tiny scales – their microstructures, in other words. Now, imagine for a minute we have a microscope that can be used to magnify a social process, such as coaching. As well as showing us how coaches behave, the ability to magnify could add further layers of detail such as how their specific behaviours change in different contexts.

Academics in Scotland have taken this approach in a new season-long study focusing on an elite female rugby union coach.
Systematic observation in coaching research is the process of witnessing and then describing behaviours and actions as they happen during coaching practice.

In the simplest terms, imagine a researcher watching a coach and noting down what they see them doing.

While this approach is recognised as one of the key methodological foundations of coaching research – and important as it helps understand what coaches do – the researchers behind this new study suggest it is limiting as it does not help understand how and why they do it.

Activity classification – the act of classifying the activities and tasks in the sequence in which they occur during coaching practice – provides an opportunity to try to overcome these limitations. For example, video recording a coach can enable researchers to capture what they do, how long they do it for and the context in which they do it.

Therefore, combining both systematic observation and activity classification gives researchers more opportunity to study the complex microstructures of coaching practice; for example, analysing coach behaviour in both training and competitive sessions, across extended periods such as an entire season, and taking into account their interactions with other coaching associates.

The idea is that by developing a more in-depth understanding of these microstructures of coaching practice, coaches will be better placed to critically reflect and understand how their own practice impacts on their players' learning and development.
The researchers identified a gap in existing coach behaviour research at the elite level of rugby union and particularly in the female game.

The study was therefore based on the microstructure of the coaching practice of a female head coach of a national rugby union team throughout an entire season in both training and competition.

To capture the data, the team modified an existing rugby-specific behavioural observation instrument that had previously been used with elite-level coaches and included a category capturing interactions with associates, as well as players. The team's additional modifications ensured the instrument was relevant for women's rugby union, and both training and competition settings. The instrument captured 24 categories of coach behaviour across three forms of activity – training form (drill-style training), playing form (game-like training) and competition. A shortened example is included in the table below.

<table>
<thead>
<tr>
<th>Context</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training Form</strong></td>
<td></td>
</tr>
<tr>
<td>Fitness</td>
<td>Improving or testing players’ fitness (eg warm-up, cool-down, strength and conditioning)</td>
</tr>
<tr>
<td>Technical</td>
<td>Isolated technical skills – unopposed, alone or in a group (eg passing, kicking)</td>
</tr>
<tr>
<td>Skills</td>
<td>Re-enacting isolated, simulated match incidents with or without a particular focus on technical performance (eg line-out, scrum)</td>
</tr>
<tr>
<td><strong>Playing Form</strong></td>
<td></td>
</tr>
<tr>
<td>Small-sided games</td>
<td>Match-like play, with reduced numbers of players</td>
</tr>
<tr>
<td>Phase of play</td>
<td>Unidirectional match-like play, towards one try line (eg one team always attacks)</td>
</tr>
<tr>
<td><strong>Competition</strong></td>
<td></td>
</tr>
<tr>
<td>Competitive match</td>
<td>Actual match play</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of name</td>
<td>Use of name when speaking directly to a player</td>
</tr>
<tr>
<td>Pre-instruction</td>
<td>Directional information given to the player before the activity starts – it explains how to execute the drill, task or game, and it is about doing the practice, the nature of the practice (eg ‘Three of you will defend this line.’)</td>
</tr>
<tr>
<td>Technical explanation</td>
<td>The coach states how the performance or activity relates to the match (eg ‘That’s the line you need to take on Saturday.’)</td>
</tr>
<tr>
<td>Concurrent instruction</td>
<td>Directional information, reminders or cues given about the nature of the activity during the activity, or instructions as if from a referee (eg ‘Hit the bag.’ ‘Get onside.’)</td>
</tr>
<tr>
<td>Commentary</td>
<td>Verbal descriptions of the performance or activity uttered aloud, but not to communicate with players or associates</td>
</tr>
<tr>
<td>Concurrent praise</td>
<td>Non-specific praise given during the activity (eg ‘Excellent’, clapping)</td>
</tr>
<tr>
<td>Scold (general)</td>
<td>Displeasure about general behaviours, such as attitude and effort (eg ‘You’re not listening.’)</td>
</tr>
</tbody>
</table>
The team video recorded every training session and match throughout the season, with the coach wearing a microphone to capture audio each time. In total, over 1000 minutes of behavioural observation were recorded.

The lead researcher watched the footage and categorised the coaching activities in sequence, as well as creating a behavioural log to capture all behaviours exhibited by the coach that matched the categories and definitions in the modified instrument.

The end result was a detailed database listing specific coach behaviours, the time intervals the coach spent exhibiting each behaviour and the specific activity context of the behaviour (i.e., training form, playing form or competition).

The data was analysed in the context of the Game Sense philosophy of coaching. As noted by Light and Robert, this involves using match-relevant games to create a learning environment for players that the coach facilitates by questioning and creating opportunities for players to interact. The idea is that this games-based learning gives players opportunities to develop skills such as problem solving, which are seen as crucial for successful competitive performance.

On analysing the data, the researchers identified some interesting results.

The who and the how (continued)

Generally, the academics found training sessions were predominantly comprised of playing form activities, with less time spent on drill-style training (in line with the Game Sense philosophy). Training sessions were also, on average, significantly shorter on the days leading up to competitive matches than during the rest of the season.

The behaviours the coach exhibited most frequently (in order) were:

- observation
- conferring with associates
- management
- questioning
- concurrent instruction.

The list of behaviours the coach spent the most time on was the same with the exception of replacing concurrent instruction with correction. This showed that while the coach used concurrent instruction more often than correction, she actually spent more time correcting the players.

There were also clear differences in the coach’s behaviour in different contexts. Reflecting the importance of coach questioning during games-based learning, she spent more time questioning, technically explaining and correcting players during training sessions than in competitive matches.

Comparatively, in the competitive domain, the coach was found to spend more time conferring with associates, observing and providing commentary.

And at a more micro-level, there was further variation in the coach’s behaviour. Use of name was more frequent during skills activities than fitness activities, more time was spent on concurrent praise during technical activities than at any other time, and scolding was used most frequently in phase of play and conditioned games activities.

Exploring the microstructure

Magnifying the Microstructure
Signposting to a games-based philosophy?

The researchers found that over the course of the season, the majority of training time was spent in playing form activities (58.5%), and this was in fact the highest proportion of playing form activities recorded in any coaching practice research to date.

Thus, they suggested the approach taken by this coach may signpost other coaches to what a more games-based/Game Sense coaching approach might look like; for example, using questioning, correction, concurrent praise and scolding techniques during games-based activities and a more observational approach including conferring with associates during competitive situations.

However, they note the picture is more complex than that. While playing form activities accounted for the majority of training time, there was still a significant amount of time spent on training form activities (i.e., skill development through drills, etc.). And coach behaviors like questioning and praise were actually found to be more prevalent in training form activities than in playing form games (contrary to what we and the researchers may have expected).

In explaining this finding, the team noted training form activities present the opportunity for quick performance gains in the short term so it makes sense that they would form a key component of the coach’s training plan, given the need for her to balance short-term performance improvement (in preparation for the next match) with longer-term development (in preparation for the next World Cup).

They also noted some rugby-specific barriers that prevented the coach from implementing more playing form activities where questioning and praise would have been more prevalent. For example, touch rugby is a game often used in rugby coaching, but its relevance to an actual competitive match is debatable given it precludes a key element of the sport (i.e., tackling and what happens after a tackle [ruck, maul, etc]).

The research also highlighted the danger of coaches implementing games that do not help the team practice what they will encounter during a match. For example, the coach used a phase of play game where one group of players repeatedly attacked another defending group of players.

When the attackers made a mistake or their possession was interrupted by the defenders, the game was restarted. Neither group therefore practiced what to do in the event of a turnover, when attack would need to quickly switch to defense and vice versa.

Therefore, instead of identifying this coach’s practice as guidelines for a Game Sense philosophy, the researchers argue coaches should take a more critical approach to reflecting on their own coaching practice.

Specifically, coaches should consider how they design each activity, what they are going to do to implement it and how relevant it is to their competition.
Learning from the research

This study provides a detailed breakdown of an elite coach’s behaviour that goes beyond simply what she did by considering in what context she did it and for how long. While the researchers note a need for further studies that add more to the why and how elements of coaching behaviours, this work provides some key learning points that coaches in any sport can consider:

- Take some time to critically reflect on your own coaching practice and the learning environment you create for your players. Ask yourself which behaviours you exhibit most often. How long do you spend exhibiting different behaviours? How does your coaching differ in different contexts? After reading this summary, is there anything you might consider doing differently?

- If you want to implement a games-based approach, consider how much of your training sessions will be dedicated to games-based activities and how much will be dedicated to training activities developing specific technical ability/skills. A combination of both types might help you improve performances in the short term and develop players over the long term.

- If developing games-based activities for your players, take care not to design games that do not accurately reflect what players will experience during a match.

- On the flip side, ensure the games you do develop replicate situations players will encounter on the field. This can be combined with questioning players at appropriate moments to ensure they develop problem-solving skills that they can recall when required during a match.
This summary is based on the following article:

If you are interested in this subject, further reading is available in the following research summaries:
sports coach UK Research Summary 6: Communicating with Players during a Match, http://joom.ag/QfT

Other academic articles referenced in this summary are also available:
