

## The evolution of philosophies in professional sports medicine



Sports medicine is a relatively novel specialty, but established enough that there are now multiple schools of thought or philosophies, about how to practice within the field. In fact, by being a novel medical specialty, there may be greater scope to respect different philosophies in sports medicine, without being as bound by a mentality of “this is the way things have always been done”. A mature sports medicine philosophy should ideally be blend of the measured teachings of traditional medicine, the academic approach of modern evidence-based medicine and the “can-do” approach of athletes. Most importantly, a mature sports medicine philosophy should be situation-specific. Professional athletes and exercising individuals with the same diagnosis can often (and should) be treated differently because of situation-specific circumstances. However, there is some common ground between the way sports physicians treat professional athletes and the way that sports physicians can help to treat everyday patients in a manner that may be more beneficial than the approach that they might receive from hospital-trained specialty doctors.

### Philosophies for treating professional athletes

Seven years ago I wrote a Dr J piece called “Winning at Russian Roulette”<sup>1</sup>, in which I discussed some of the medical management at my rugby league team, the Sydney Roosters, in their 2002 Premiership year. Even though I claimed to have played some role in this success, fortunately I was humble enough to admit that a lot of the medical management was aggressive and involved risk-taking. Circumstances that year

had conspired to make it look like the risks were all inspired choices that had paid off. The most important of these was a Premiership victory, which in sport retrospectively makes geniuses of all those associated with it. In the 2002 season, the team had a very high injury rate in the middle parts of the season, but we managed to return enough players in a fit-enough state to peak at the ideal time. Luck played as important a role as good management.

I foresaw a future of times when some of my medical risks wouldn’t lead to such excellent outcomes. Perhaps I didn’t see (or want to see) a future as bleak as the Roosters 2009 season when we had fallen out of contention well before the halfway point of the season and, for most the season, it would become sensible *not* to take many medical risks. Does this mean I need to re-visit my mentality of 2002 that doctors can make an important difference to team results? After all, it superficially looks as though I haven’t had any positive influence on the Roosters’ results in 2009, so how is it consistent to claim that I did earlier in my career in 2002?

Trying to explain this paradox is where I want to head with this article. I’ll start with an anecdote that sums up the bad luck of our losing season and how bad luck can retrospectively make your medical management seem worse than it otherwise would have been, just as good luck makes the management look good.

Luck is forever present, despite our obligation to try to take it out of the equation as much as possible with skill. After round 5 this year, the Roosters were sitting on 2 wins and 3 losses

(of which 2 had been close games) and were involved in an obviously important away match to try to keep the season on track. In this game, we had led handsomely at half-time, but our opponents the Warriors were coming back at us and we were clinging to a narrow lead late in the game. Our half-back, Mitchell Pearce, was involved in an accidental head clash that immediately left him with a massive forehead laceration that was pouring out blood so profusely that we had no option but to interchange him immediately from the field. Given that he was a key player, that he hadn't been concussed in the incident, that the game and season was at a critical stage and that our team fortunately hadn't used up all of its interchanges, I thought that aggressive medical management was called for. We made the quick decision to staple the laceration in the change room, turban his head up with bandages and then offer the coach the option of sending him straight back out (for the final few minutes of the game), which he took.

With the game in the balance, Mitchell Pearce returned to the field, took possession in our defensive half and attempted a 40–20 kick. He kicked it brilliantly, catching the opposing winger off guard, and it looked like it was going to bounce into touch and virtually guarantee us the win. However, just as it was about to roll out it took a massive leg break and decided to stay just inside the field, allowing the Warriors to regather. They managed to tie the game up with a penalty and later kick a winning field goal in golden point extra time. It was our third narrow loss in four games and it seemed to knock the confidence out of our team. Worse still, three days later Mitchell Pearce had his forehead swollen up like a balloon requiring antibiotics and a few days off training. I had a sinking feeling that if I had ruled him out of the remainder of the game and put in regular stitches, that his wound healing would probably have been more uneventful. He managed to recover just in time for the following week's game, but a disrupted preparation from the infected laceration wouldn't have helped his performance. We got thrashed in this game and our season had started to unravel. I felt bad because my aggressive medical management looked like it had hurt us, although if a ball had bounced a different way it would have paid off in spades. This sort of situation might be less common for a team doctor, but it is probably what coaches need to put up with on a weekly basis, which explains why they generally get grey hair pretty quickly! As a medical anecdote, it is a good illustration of the most fundamental dilemma that a team doctor will face – do you hold an injured player off the field or try to get him quickly back on the park? And if you rush him back do you risk a worsening of the condition which might cost you at a later time?



### **Philosophies of playing and coaching sport**

Analogous to the fundamental dilemma of the team doctor is a similar tension that coaches (and players) constantly face in team sport. The rules and tactics of most team sports mean that in trying harder to set up the opportunity to score points, you need to take risks which can therefore also increase the chances that your opponent will score points. Therefore a team (and individuals within the team) are constantly faced with the option of playing conservatively (defensively) or aggressively (offensively), usually involving a trade-off between the two. One of the great paradoxes in team sports is that successful teams generally tend to play conservatively for the most part, but fans and the media generally favour aggressive risk-taking players. Successful teams will generally base their success on choking down opposition ability to score, only playing with a high-risk aggressive approach when the situation demands it (i.e. when a scoring chance is imminent, when the opposition is tiring or when team is narrowly behind towards the end of the game).

Table 1 – Aggressive versus conservative play in various football codes

Sport	Examples of aggressive (risky) play (more likely to score but at a cost of giving opponent more opportunities as well)	Examples of conservative (defensive) play (limiting opportunities for opponents)
Australian football	<ol style="list-style-type: none"> <li>1. Kicking long to a contest</li> <li>2. 'Peeling off' when ball is in dispute</li> <li>3. Playing 'wide' of direct opponent</li> <li>4. Traditional positional play (i.e. forwards stay in the forward line)</li> </ol>	<ol style="list-style-type: none"> <li>1. Handballing or kicking short to an unmarked teammate</li> <li>2. Staying 'manned up' when ball is in dispute</li> <li>3. 'Tagging' direct opponents</li> <li>4. 'Flooding' defence</li> </ol>
Rugby league	<ol style="list-style-type: none"> <li>1. Offloading in tackles</li> <li>2. Multiple (or long) passes</li> <li>3. Running on 5th tackle</li> </ol>	<ol style="list-style-type: none"> <li>1. Keeping the ball safe when tackled</li> <li>2. Few (or short) passes, including dummy-half runs</li> <li>3. Kicking on 5th tackle</li> </ol>
Rugby union	<ol style="list-style-type: none"> <li>1. Running the ball from the defensive zone</li> <li>2. Attempting to steal the ball when defending</li> </ol>	<ol style="list-style-type: none"> <li>1. Long-kicking from the defensive zone</li> <li>2. Avoiding giving away penalties when defending</li> </ol>
Soccer	<ol style="list-style-type: none"> <li>1. Playing a formation with multiple strikers (e.g. 4–3–3)</li> <li>2. Shooting from a tight angle</li> <li>3. Committing heavily during tackles</li> <li>4. Trying to retain possession when deep in defence</li> </ol>	<ol style="list-style-type: none"> <li>1. Playing with a single striker (e.g. 4–4–1–1)</li> <li>2. Crossing the ball to a teammate when attacking on the flank</li> <li>3. Holding slightly off opponent when defending</li> <li>4. Kicking long from defence</li> </ol>
American football	<ol style="list-style-type: none"> <li>1. Passing plays (esp. long passing)</li> <li>2. Rushing/'Blitz' defence</li> </ol>	<ol style="list-style-type: none"> <li>1. Running plays</li> <li>2. Conventional 'one on one' defence</li> </ol>

Table 1 lists examples of aggressive versus conservative play in the football codes. When defending, in almost all of the football codes, essentially pushing hard for a turnover involves "aggressive" defence, whereas conservative defence involves holding the attack away from their scoring zone. Usually avoiding giving away penalties is conservative, although this may depend on how close the opposition is to scoring. Home ground advantage usually arises in the football codes primarily because the referees/umpires will subconsciously give the home team a little more latitude with aggressive defence than they will the away team, because of the screams of the crowd.

Table 1 could be expanded to include non-football sports and even non-team sports. In golf it is aggressive to "shoot at the pin" but if you try it on too many holes you'll end up in too many bunkers. It is aggressive in tennis to come in to the net and defensive to stay at the baseline. It is aggressive to bowl short of a length if you are a fast bowler. "Slogging" cross-bat

in Test cricket is aggressive whereas "playing a straight bat" in the Commonwealth countries has become a metaphor for acting conservatively in everyday life. In baseball, Moneyball describes how the Oakland A's worked out statistically that stealing bases and swinging at too many pitches were overly aggressive, so they recruited players who did the less flashy things but who won them more games<sup>2</sup>.

Doing the conservative thing is often referred to as "team play" and winning teams generally have players who stick to the script. In losing teams, when it is obvious that team glory is not going to be obtained, it is often too tempting for individual players to try for individual glory and try to pull off high-risk plays, which look great when they come off. A good team playing a bad team can often just play conservatively and wait for the less patient opponents to invite them to score by taking silly risks.

Another paradox of team sport is that successful teams are prone to being accused of being boring and too clinical, because they take few risks, something which Pim Verbeek has recently been through even though under his coaching, Australia had qualified for the football World Cup at the earliest opportunity. When this criticism actually threatens to have fans walk away from a sport, the rule makers can sometimes try to step in, because very few teams can get away with playing like the Brazilian team does (i.e. winning *and* being flamboyant). In soccer, they brought in 3 points for a win (and only 1 for a draw) to encourage attacking play, as well as the away goals rule for knockout match series. In Super 14 rugby a similar innovation is bonus points for scoring 4 tries in a match. They invented the shot clock and 3-point shot in basketball, which both entice teams to take low percentage shots rather than hang on to the ball. In cricket they invented Twenty-20 which encourages every batsman to slog, because the theatre-goers find this more exciting.

### **Defensive (conservative) sports medicine**

The various ways (or philosophies) of practising sports medicine aren't completely analogous to coaching strategy, but they can be categorised in a similar way. The philosophy of traditional medicine (i.e. hospital specialty) teaching is to generally be conservative and avoid exposing patients to risk. I would characterise this as a defensive approach – maybe a “textbook” approach. Conservative is another word to describe it, although this can mean “non-surgical” and quite often a recommendation for surgery is defensive. Surgeons tend to magnify the risks of exercise and activity (and ignore the benefits) but often take the opposite approach to surgery itself (i.e. downplay the risks and magnify the benefits of surgery). For a surgeon, it is “if in doubt, cut it out” or at the very least “sit them out”.

One yardstick for the defensive medical approach is “what management would least draw criticism from the majority of my *medical* peers?” Another is “what management will minimise the recurrence rate of this injury/condition?” After all, the situation which tends to lead to the most criticism in sports medicine is the recurrence of an injury in a player's return match, which suggests the team medical staff failed to adequately assess fitness for return to play. Table 2 lists some of the common management scenarios in sports medicine, with the middle column detailing a typical defensive approach. A defensive sports medicine approach involves ordering a lot of investigations and referring to a lot of sub-specialists for further opinions. In addition, it means taking heed of any

negative opinion or adverse finding on a scan. A doctor practising in a defensive way wants to minimise any further harm that a player/athlete may be subjected to by continuing to play. Under a defensive philosophy, the final arbiter of return to play must be clearance by the doctor rather than self-assessment of fitness by the player.

### **Passive sports medicine**

The opposite of defensive sports medicine is not particularly an “aggressive” approach but more a passive approach. Defensive practice is active, whereas passive is choosing not to act. Athletes and players left to their own devices will generally try to carry injury and play through the pain. Like a surgeon's attitude to surgery, the typical player will magnify the benefits of playing and downplay the risks of carrying an injury. And just as a surgeon couldn't operate as well if he/she was obsessing about DVTs and infections, a player can't play as well unless able to perform the mental trick of pretending the injury isn't there when in the heat of battle.

Because the defensive sports physician can be seen by players as a handbrake, the *modus operandi* of the passive approach is to “let them play”. One characteristic of the passive approach is a view that an investigation should only be performed if it will change management. Therefore, if a player is carrying an injury but is going to play anyway, an investigation is not needed as it won't affect the decision. The passive sports medicine philosophy is based on a mentality that doctors shouldn't be paternalistic. Whilst there are risks involved in playing sport and carrying injuries, if players wish to take those risks, a passive doctor feels bound to allow them do so. A sports physician can be basically passive in philosophy but this does not mean refusing to work – it just means doing so on a “consultant” basis rather than active searching for injuries to manage and holding off management unless it is clearly required. Under this philosophy the return-to-play decision rests primarily with the player.

Compared to a defensive philosophy, a passive philosophy will probably result in more players being available for games, but perhaps also to a higher rate of selection errors (recurrences or episodes of players performing badly due to injury). The bonus from the doctor's viewpoint is that in the event of a selection error, most of the perceived blame would lay at the feet of the player rather than the doctor. Whilst the passive philosophy may seem a bit passé, it is worth remembering that there are still many wealthy teams in sports around the world that don't take doctors with them

to away matches. If finance isn't the reason for this decision, then it indicates that team management actually prefers a passive approach from the team doctors.

### Actively aggressive sports medicine

Actively defensive and passive philosophies represent the opposing poles of philosophy from embryonic sports medicine, but as sports medicine at the fully professional levels has a distinct third school in which the stakes are raised. This involves active medical intervention in order to allow players to continue to compete.

The mantra of the aggressive philosophy is trying to minimise "missed player games" or, alternatively, to maximise player availability. Sometimes the link between the medical management and continued participation is easy to demonstrate – for example a local anaesthetic injection which allows an otherwise-injured player to step on the park. On other occasions, the value of the medical management may be harder to prove or even somewhat dubious – for example the Actovegin and Traumeel cocktail of Mueller-Wohlfahrt<sup>3</sup>.

A cynic may suggest that some so-called aggressive medical treatments are no more than placebo. However, their very administration changes the psychological environment under which the athlete is competing. The player is on the field not just because the doctor agreed not to intervene, but because the doctor actively assisted. The doctor is in the position of an expert on injuries who has given the green light. This gives the player greater confidence in the return to play decision, but it also gives the doctor greater responsibility to help maximise the number of correct decisions. In claiming some of the credit for player participation in an aggressive philosophy, a doctor must also take more responsibility for complications and recurrences, which in professional sport will eventually occur.

One of the great weapons of the aggressive sports physician – the cortisone injection – has now been shown to perhaps help in the short-term and but be harmful in the longer-term for certain tendinopathies<sup>4</sup>. And last but not least, the aggressive sports physician is probably more likely than others to be at risk for medicolegal liability. A player who claims a premature end to his career because of reckless continued participation doesn't have much of an argument if the doctor was basically a bystander and the player made the decisions to play himself. There is at least some potential for argument if the player maintains he wouldn't have been able to take the field save for active intervention by the doctor. Therefore an active aggressive sports physician generally needs to

thoroughly investigate and document cases well where potential for long-term injury or permanent disability exists. However, the existence of active aggressive sports medicine is the rationale for teams in certain competitions (e.g. AFL) to pay good dollars for team medical staff, in the belief that getting top practitioners will assist the team in getting the best value out of their players.

### Which sports medicine philosophy is better?

Table 2 shows examples of each philosophy and probably illustrates that virtually no doctor could be pigeon-holed as being exclusively in one school or another. Many sports physicians, for example, would like to be passive in certain situations (?minor injuries), defensive in others (?with potentially serious injuries) and aggressive in others (?in high stakes situations like finals). A doctor who was inflexibly and firmly in one school could be painted as a spectator/freeloader (entirely passive approach), a handbrake/prophet of doom/ Dr Death (entirely defensive approach) or a cowboy/maverick/show pony (entirely aggressive approach). Nevertheless some generalisations can be made. AFL club doctors have moved away from a passive approach in the last 15 years, with doctors now present at most training sessions and heavily involved in return-to-play decisions<sup>5</sup>. In some areas the shift has been to a more defensive approach – for example the average AFL player with a hamstring injury spends a greater number of weeks out but with a lower recurrence rate than a decade ago<sup>6</sup>. There is an impression that teams which can't make the AFL finals are, sensibly, implementing ultra-defensive medicine to best prepare their team for the following season, which can include early decisions to undergo surgery.

Aggressive sports medicine is more often seen at the other end of the ladder around the time of the finals series. Of the AFL teams, I've noticed a trend, perhaps, for the higher-profile teams to be less aggressive, possibly because the media backlash would be fiercer in the event of a perceived stuff-up. The Brisbane Lions and Sydney Swans have in common that they can fly under the media radar a bit more easily than the southern teams, and their medical teams have received (positive) publicity for aggressive management leading up to Grand Finals of recent seasons. Nevertheless, by being more active, the profile of all AFL medical teams have lifted and along with the evolution of the sports medicine media experts like Larkins and Brukner<sup>7</sup>.

The passive approach is still respected more in the NRL and maybe this is not just for financial reasons. Rugby league seems to be a game where if you can train well you can

Table 2 – Specific examples of various sports medicine philosophies

Situation	Passive philosophy	Defensive philosophy	Aggressive philosophy
Muscle strains	Let the player train and play when he thinks he is ready	MRI scan plus multiple clinical tests; hold the player back if any parameter abnormal	Encourage (and possibly facilitate) quick return to play with newer treatment modalities (e.g. autologous serum injections)
Painful but minor contact injuries (e.g. rib cartilage)	Let the player play if he thinks he can carry the injury	Advise against play if performance may be effected or recurrence is likely	Encourage use of local anaesthetic to allow continued play
Initial shoulder instability	Advise rest while pain persists then return to play, with surgery only considered after multiple episodes of instability	Advise early/immediate surgical stabilisation to increase the chance of a successful outcome	Encourage early range of motion and re-strengthen plus early return, followed by reconstruction immediately post-season
Gastroenteritis	Oral rehydration and again let the player decide whether he feels well enough	Withdraw from play if there is any sign whatsoever of fever or dehydration because of possible sequelae	IV fluids given to ensure adequate rehydration before play starts, with fever being the only contraindication to play
Bleeding player on the field	Let an on-field trainer dress to minimise blood loss and contact with other players	Withdraw from play to suture under sterile conditions in the dressing room	Use a staple gun during match time to speed up return to the field
Ankle sprains	Weightbearing as soon as comfortable	Crutches and immobilisation until an MRI scan can be arranged	Rule out fractures and syndesmosis injuries and rush back everything else, including consideration of use of cortisone
Partial ACL tear	Attempt conservative treatment if the player feels able	Insist on immediate reconstruction and a 9–12 month recovery period	Consider conservative options but go with accelerated rehabilitation and aim for 6 month return if surgery is required
Concussion	If the player can coherently say that he is right to play, let him play	Use consensus concussion guidelines and exclude if guidelines advise or if testing is in any way abnormal	Stick to testing and guidelines when affordable but give leeway when appropriate in certain situations
Training programs	Leave these completely up to conditioner and coaches	Take a strong stance on setting training limits for injured players	Be part of the process of individualising training loads to balance needs of maintaining fitness and managing injuries

generally play well, compared to the AFL player who can hide his dodgy hamstring on the training track but then find it fails half-way through the first quarter. Along with this the NRL doctors have slightly lower profiles, workloads and pay packets than their AFL compatriots<sup>8</sup>. In general though I think that local anaesthetic injection use – an aggressive intervention – is probably more common in the NRL, because of the greater contact profile of injuries. Even if it is common, it is not necessary for success, as one of the most successful clubs of the past decade, the Canterbury Bulldogs, has previously claimed that it is club policy to avoid local anaesthetic use, which is an anti-aggressive position<sup>9</sup>.

In my 2002 Dr J article, I certainly would have given the impression that I didn't mind using active aggressive management at the Roosters. Whilst I would still go back there in the right circumstances, from the bottom end of the ladder in 2009 it has seemed appropriate to be much more passive/defensive in the second half of the season. I recently had a player who developed gastroenteritis the day before the game and took the soft but sensible option of just ruling him out. What would be the point of trying to get him up by giving him intravenous fluids when he was vomiting the night before the match, when our season had already reached the point of no return?

In European soccer, aggressive management appears to be much more favoured on the continental side of the English channel, with some of the German, Spanish and Italian medical teams seeming to be more aggressive than, say, the EPL medical teams. Having said that, there is an argument for a defensive philosophy in an environment where the top EPL teams have over 50 fixtures scheduled per season. They have bigger squads and more of a "rotation" mentality, which therefore makes it easier to rule out a player who is only 95% fit and replace him with a similarly-skilled player at 100% fitness.

Team physician positions in the USA are dominated by orthopaedic surgeons and generalists rather than sports physicians as we know them. Therefore, for everyday injuries a passive approach is often taken and management is delegated to the athletic trainer. Players are far more likely to consult independent specialists (organised by their managers) than to necessarily stick to their team medical staff for all of their management. American professional team doctors tend to be aggressive in one way – perhaps sometimes overly – with local anaesthetic and cortisone injections. But the ever-present threat of lawsuits can also encourage defensive medicine once there is a sign of trouble. Perhaps a fourth

philosophy for American team physicians is needed where you put into writing that all of the injured players are unfit but they can sign waivers to be allowed to play!

### Can we take this back to the clinic?

Just as design features from Formula One cars can sometimes be incorporated into regular passenger cars, it is also worth bearing in mind that these different approaches can be taken to back to the sports medicine centre. Not every patient needs active management and not every patient needs a scan. It is more possible than most doctors realise for a 60-year old with a rotator cuff tear or meniscal lesion to avoid a surgical opinion. You can do a good service for a patient who works in the door with a lumbar MRI scan and a worried look telling them it isn't all that abnormal to have disc bulge at L5/S1.

On the other hand, some of your most grateful patients can be those who have required aggressive treatment to allow them to achieve a lifetime goal, such as competing in an Iron Man or marathon or hiking to base camp at Everest. It might seem natural to take a defensive approach for Worker's Compensation patients, but there are sports physicians in Australia making good money by offering a service to companies which is less defensive than they are used to. The most important message is that, in sports medicine, there is more than one way to treat a condition in different circumstances and it is important to discuss these with the patient and decide on a management plan together.

### Dr J

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