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PART SIX
GAMES PEOPLE PLAY

Australian women show the way to equality at the Winter Olympics

Emma Sherry

The London 2012 Summer Olympic Games were declared the "women's games" — with female participation in all sports and every nation represented by at least one female athlete. Although the Sochi 2014 Winter Olympic Games see the first women participating in the awe-inspiring sport of ski jumping, the Winter Olympics are yet to reach equality in participation between male and female athletes.

Women have participated since the the first Winter Olympic Games in Chamonix in 1924, with 11 women participants out of the total 258 competitors. But female athletes were only permitted to participate in two events — women's figure skating and mixed pairs. In fact, figure skating remained the sole sport for female athletes until 1948 when skiing was opened as a competitive sport for women.

Women in Sochi

At this year's Winter Olympics, women will compete in 14 sports, including: alpine skiing, biathlon, bobsleigh, cross country, curling, figure skating, freestyle skiing, ice hockey, luge, short track, skeleton, ski jumping, snowboard and speed skating.

Nordic Combined, a sport that comprises ski-jumping and cross-country skiing, remains the sole sport for males only.

Within each sport there are a number of events that are exclusively for men or women, and an increasing number of mixed-gender events. This Winter Olympics, the International Olympic Committee has introduced three new mixed-gender events: figure skating, luge and biathlon. But the number of medals available for men remains greater than those for the female athletes.

As noted in *The New Yorker* a few days ago, the inclusion of ski-jumping for women has been "the product of years of dedicated lobbying, and even a legal challenge mounted in 2009, by the sport's participants and their supporters". The inclusion of female athletes to the Winter Olympic sports has been slow, and unsurprisingly, the more extreme or more physical sports have taken longer to permit female participation.

The bobsleigh was open to female competitors for the first time at Salt Lake City in 2002, and women's ice hockey in 1998. The rationale for this exclusion echoes arguments for female exclusion from sport events throughout the modern Olympic era, such as: the sports being too dangerous, or insufficient female participation to warrant inclusion. These arguments conveniently ignore the historical and structural barriers that have limited female participation in earlier Games.

For the Australian team at Sochi, this is the first time in the history of both the Summer and Winter Olympic Games that there are more women (31) in the team than men (29), and indeed more female medal hopes.

Australia's female Winter Olympians

Australia's participation and success at the Olympic Winter Games is extraordinary, particularly the climate, landscape and the distance away from the traditional home of winter sports in the Northern Hemisphere. Australia's representation in the Olympic Winter Games dates back to 1936 at Garmisch-Partenkirchen in Germany and, since that time, the country has sent a team to all

Winter Olympics except for the post-World War II Games in St Moritz, Switzerland in 1948.

Australia has been represented by just over 200 Winter Olympians, with nine medallists (five gold, one silver and three bronze medals).

Female athletes have been the exceptional performers for the Australian team. Aerial skiing legend Jacqui Cooper was selected for five Winter Olympics from 1994–2010, and Zali Steggall won bronze in the Slalom at Nagano in 1998.

The female aerial skiiers have been the success story of the Australian winter sports, with Australia winning medals at the last three Games in Salt Lake City 2002, Torino 2006, and Vancouver 2010. At Salt Lake City in 2002, Alisa Camplin became the Olympic aerials champion and also Australia's first skiing gold medallist. Four years later in Torino, Camplin produced another sensational performance to take bronze. Lydia Lassila won in Vancouver 2010 with an Olympic record total score of 214.74. Sochi 2014 is Lassila's fourth Winter Olympic campaign.

The Vancouver 2010 Winter Olympic Games was Australia's first Olympic Team of gender equality (20 men/ 20 women) and our most successful.

It was also the first time many Australians saw the exceptional skill of Torah Bright, winning Australia's first Snowboard gold in the half-pipe event. At Sochi 2014, Bright made history, by qualifying in all three snowboarding disciplines — halfpipe, slopestyle and snowboard cross (although she missed out on a slopestyle medal on the weekend).

The Winter Olympics may not be familiar to many Australians, but our women have been leading the charge towards equality and success in the sport. The success, and indeed visibility, of our female winter Olympians helps challenge the traditional expectations and limitations placed on female athletes, particularly those like Bright, who are not only exceptional at their sport, but also pushing the boundaries for male and female athletes alike in their achievements.

A competitive edge: design and technology at the Paralympics

Keith Lyons

Athletes competing at the Paralympic Winter Games in Sochi have varying levels of access to science, medicine, technology and engineering support from their national sporting organisations.

As with the Winter Olympics held earlier this year, some athletes benefit from a very comprehensive, bespoke service to support their performance. This kind of service raises important issues about whether technology and engineering innovations are "essential for performance" or constitute "performance enhancement".

How do blind biathletes shoot targets?

Some technological and engineering advances can be accessed by all athletes at the Winter Paralympics. All visually impaired competitors in the Biathlon events have access to optronic rifles that are sensory substitution devices.

Athletes arrive at their prone shooting position with their rifles connected to the targets. Their sight of the target is replaced by augmented sound. Athletes wear electro-acoustic headphones that relay different tones depending on where the athlete aims the rifle at a 25-mm diameter target 10 m away.

As the rifle moves to the centre of the target, the tone becomes higher. There is a camera in the rifle that detects a LED light at the centre of the target. Once the athlete has pulled the trigger on the rifle, she or he can hear whether they have hit the target from another tone.

This sensory substitution gives visually impaired athletes the essential support they need for performance. In Biathlon, athletes

are required to ski a penalty loop or receive a time penalty for each missed shot.

Local investment

Many of the nations at the Winter Paralympics have made significant investments in developing services to their athletes that go beyond shared facilities. The UK has had a decade of working closely with industry and universities to test methods and equipment that might yield performance gains.

Last year, the Australian Sports Commission (ASC) formed a two-year partnership with the Australian Sports Technologies Network in order to support innovative use of technology and engineering.

While the announcements about such partnerships are made public, there is usually a silence about what the partnerships are doing to improve performance. Many countries believe that the silence protects their "competitive advantage". Occasionally, some information is shared.

Personal engineering

New Zealander Adam Hall is an Alpine Skiing competitor at Sochi classified as LW1 (an athlete with an impairment that strongly affects both legs). He won the standing slalom gold medal in Vancouver in 2010.

In the intervening four years, Adam has undergone detailed physical evaluations to explore any adaptations that might be possible to improve his performance.

Two distinct areas were identified during these evaluations:

- One was to transform the ankle foot orthoses he wore in order to optimise his racing position. Adam was scanned in 3D to model the biomechanical alignment of his lower limbs. The company that undertook this project in New Zealand has worked with NASA on the Mars exploration project.

- A second area for improved design and fabrication was Adam's outriggers (elbow skis). These carbon fibre outriggers were produced by a company with a record of involvement in New Zealand's America's cup teams.

Another example of the use of innovative design engineering comes from Canada. Work has been underway since the Vancouver Games to develop a sit-ski sled that optimises performance and safety.

The designer, Joe Franklin, has been investigating the properties of shock absorbers and has chosen to use mountain bike shock absorbers and a lightweight frame design to make the sleds much more responsive to the terrain.

One of the athletes using the new sled, Josh Dueck, won a silver medal in the Men's Downhill — Sitting event.

A second athlete, Caleb Brousseau, won a bronze medal in the Men's Super G — Sitting event.

While these are shared examples of innovation in design and engineering, much of the innovation at Sochi remains unshared. It is highly likely that many of the equipment learning experiences at the Winter Olympics a month ago will be embedded in Paralympic programs.

The adoption of innovation brings the question of "performance enhancement" to the fore. The International Paralympic Committee (IPC) mandates that:

> In principle unnatural or artificial aids which modify the performance of the competitors and/or constitute a technical correction of the individual's physical predisposition to a defective performance, as well as competition equipment which impact the health of the competitors or increase the risk of accidents are to be excluded.

The availability of an ASC Competitive Innovation Fund will focus the ethical dimensions of this debate in Australia.

Each year the fund will seek applications for:

> Technology related activities that are innovative, are able to demonstrate a positive performance impact and which may be "outside" the scope of existing resources.

So, in South Korea in 2018, who knows what incredible technology we'll see?

Integration not segregation: para-sports at the Glasgow Games

Simon Darcy

Australian athletes at the Commonwealth Games won a stack of medals over the weekend, bringing the nation to the top of the medal tally. Of the Aussie medal winners, para-swimmer Daniel Fox took gold in the 200m freestyle (where he also broke his own world record in the heats) and para-cycling pair Kieran Modra and Jason Niblett were edged out of first place by Scotland in the sprint B tandem.

But para-sports haven't always been part of the Commonwealth Games schedule. In fact, this is just the fourth Commonwealth Games that para-sport competitors have been included.

The para-sport athletes at these Games are not just athletes with physical disability, but also those with vision impairment, amputees and those with cerebral palsy, head injury or stroke.

And like athletes that compete at the Paralympics, those at the Commonwealth Games are elite performers who have gone through rigorous selection criteria to make the team — they are the best of their classes.

The calibre of para-sport athletes present at the Commonwealth Games include the wheelchair racer Kurt

Fearnley, who is probably the best known Paralympic athlete in Australia.

He will be competing in the Men's 1,500m T54 wheelchair race tomorrow (with the final held on Thursday), although he's better known for his efforts racing in wheelchair marathon events at the Paralympics and cities around the world.

But what many people don't know is that from as early as the 1970s, the Commonwealth Games began to conceptualise the bringing together of para-sports as part of an integrated Commonwealth Games sport program.

Para-sporting Commonwealth history

The first demonstration para-sport events were held at the 1994 Commonwealth Games in Victoria, British Columbia.

Manchester 2002 became the first Commonwealth Games to fully integrate athletes with disabilities in the sport program.

In the Manchester 2002 program there were 10 full medal events across five para-sports, including athletics, lawn bowls, swimming, table tennis and weightlifting, and the number of para-sport events integrated within the Commonwealth Games program has only increased since.

Australia played its part in the development of para-sports at the Melbourne 2006 Commonwealth Games, with 12 full medal events competed for by 189 athletes from 25 nations in athletics, swimming, table tennis and powerlifting.

By Delhi 2010, there were 15 full medal events in athletics, lawn bowls, powerlifting and swimming.

In Glasgow, there are five para-sports on the program involving athletics, swimming, powerlifting, lawn bowls and, for the first time, track cycling. Australian pairing Brandie O'Connor and Breanna Hargrave won bronze in the para-cycling debut last week.

Athletes will be competing for a total of 22 medals across the five sports, which is a modest number of medals compared to the overall program of 261 medal events on offer.

Yet, unlike the demonstration disability sport events held within the Olympic Games program, all para-sports events medals have always counted towards the medal tally for national teams.

To fully understand which events and which disabilities are represented one must navigate the very confusing Paralympic classification system.

The Paralympic classification system is based on disability type:

- amputee
- cerebral palsy
- intellectual disability
- vision impaired
- wheelchair
- les autres (literally "the other").

Also, depending upon the disability type, there's an assessment of their physical, vision or intellectual impairment based on ten classifications:

- reduced muscle power
- passive range of movement
- loss of limb or limb-deficiency
- leg-length difference
- short stature
- hypertonia (abnormal increase in muscle tension)
- ataxia (lack of co-ordination of muscle movements)
- athetosis (unbalanced, involuntary movements)
- visual
- intellectual.

However, while the classification system is complex, medically based and (among para-sport athletes and officials) contentious, all you have to do as a spectator is focus on the tremendous competition that the "super-crip" athletes provide and enjoy what they do best.

Unofficial rules of the Tour de France matter most

Craig Fry and
Dennis Hemphill

Craig Fry

Dennis Hemphill

Riders in the Tour de France are engaging in a battle of wits as they follow two sets of rules — the official rules and the other set of "unofficial" rules that come with any competitive sporting challenge.

This *other* set of rules can occur in any sport and is described by Australian philosopher Fred D'Agostino as:

> [an] unofficial system of conventions which determine how the official rules of the game will be applied in various concrete circumstances.

This means that while there are important rules in sport that define and regulate particular activities and competitions, they do not fully explain or determine how sport is actually played.

Basically, you don't learn how to play sport by reading the official rule books. The full truth of how sporting competitions unfold is only revealed in the contest itself.

Seeing the unofficial rules in the Tour

The 2014 Tour de France is just a few stages old, and already we are seeing evidence of the official and unofficial rules of this great race — the Tour on paper versus the Tour on the road.

The first such moment came last Saturday when star sprinter Mark Cavendish crashed and badly injured himself metres from the finish of Stage 1 in Harrogate.

Television footage of the incident shows Cavendish using his head to move Australia's Simon Gerrans and secure a clear run to the finish line. Cavendish later apologised, admitting he caused the crash that brought him and Gerrans down.

The official UCI Discipline and Procedures rules specify penalties for irregular sprinting by riders. The Tour de France race regulations also say:

> To ensure that sprints proceed according to regulations, riders who deviate from the line they have chosen will be subject to the penalties provided for in the table of penalties.

So, it may come as a surprise to many that no official penalty for Cavendish's seemingly reckless behaviour has been forthcoming.

As Gerrans' post-stage comments show, no rider enjoys being on the receiving end of a shunt that costs them a podium place (or worse). Gerrans was extremely diplomatic in his comments after the crash, when he had every right to be otherwise.

But, by the same token, rider protests and official complaints are rare in races such as the Tour.

Few penalties for crashes

And, while there are past examples of similar incidents in Tour de France sprint finishes that have resulted in official penalties (Mark Renshaw in 2010, Robbie McEwen in 2005), the riders doing the pushing and shoving mostly escape sanctions.

Australia's most successful Tour de France sprinter, Robbie McEwen, was famous for his physical approach to sprinting, and is still lauded as one of our toughest ever road riders.

The Cavendish and Gerrans crash highlights the fine line that exists between the official rules and the unofficial (yet no less influential) racing etiquette of professional cycling in big races such as the Tour de France.

Being pushed off a wheel or a line in the final run to a stage finish is a common and accepted part of professional cycling. Chances are we will see it again before this year's Tour is done.

The unofficial rules

If you look closely enough, a host of other unofficial rules and race etiquette becomes apparent every year in the Tour de France.

Some entertaining and informative descriptions of these can be found in past opinion and commentary, sports journalism and in cycling blogs. There have even been books written on the topic.

Some of these unofficial rules include:

- don't attack the yellow jersey (race leader) on the last stage, even if you're only seconds behind in the general classification
- don't attack in the feed zone, or during a nature break
- don't attack the yellow jersey or other contenders if they crash or experience a mechanical incident
- riders can draft behind the team cars or take a "sticky bottle" to get back to the main bunch (especially in the case of a mechanical incident or crash)
- race leaders and the experienced riders in the peloton (main pack of riders) can call a neutralisation or go-slow if race conditions are dangerous.

If you doubt these things happen in the peloton, then you only need watch this year's race. Or consider some of the more famous incidents in professional cycling over the years, for example:

- criticism of Nairo Quintana after his attack during a neutralised stage of the 2014 Giro d'Italia
- the reaction to Alberto Contador attacking Andy Schleck after his chain slipped during Stage 15 of the 2010 Tour de France
- Jan Ullrich waiting after Lance Armstrong fell during Stage 15 of the 2003 Tour
- second place GC riders not attacking the yellow jersey on the final stage despite being mere seconds behind (such as Cadel Evans 23 seconds to Alberto Contador in 2007, and 58 seconds to Carlos Sastre in 2008).

What is especially interesting is that many of the above unofficial rules are at odds with the written regulations that supposedly govern professional cycling.

Consider the following prohibited behaviours from the UCI discipline and procedures rules:

- irregular sprint in a stage race
- pushing off against car, motorcycle, rider
- cheating, attempted cheating, collusion between riders of different teams
- rider holding on to his team's vehicle
- sheltering behind or falling into the slipstream of a vehicle
- follower leaning out or holding supplies out of vehicle
- acts of violence among riders, or towards anyone else.

Again, you will see all of these in this year's Tour de France.

Why do these unofficial rules exist?

It may seem strange that a sport like cycling, with its long history of cheating of all types (including drug use and doping), also has a strong ethos of honourable racing within the professional peloton.

It has been argued that the ethos exists because of the extreme demands and dangers of professional cycling.

> […] merely to survive, the riders had to evolve a way of existing together, competing without putting each other in danger, and without making daily life impossible.

These unofficial rules of professional cycling are therefore an important part of the culture and functioning of this sport. To some extent these are also replicated at its lower levels, even down to the amateur club grades.

Some have even argued that the unofficial norms of cycling can complement the official rules and add to the attractiveness of the contest — especially where official monitoring and sanctioning costs imposed on riders for transgressions are low, or applied inconsistently.

Indeed, so entrenched are some of the unofficial rules that they may be seen by many riders as more legitimate than the official rules (and have a bigger influence on race progression and outcomes).

The strength of these unofficial rules is likely due to the following factors:

- they are made by, implicitly agreed, and explicitly practised by most riders
- these rules allow the riders to govern and control key moments in the race, especially around risks and dangers
- unofficial rules also provide a means by which a kind of natural justice or order of the peloton can be preserved from within
- such rules and race etiquette can build social cohesion in the peloton.

So, in the Tour de France each year it is possible to see the influence of unofficial race rules and etiquette on the practice and outcomes of professional cycling.

The irony is the unwritten rules of the Tour may matter more to the riders than the official regulations.

The danger is the cultural processes responsible for producing these examples of in-race etiquette may be the same mechanism by which behaviours such as doping and other extreme forms of cheating develop and become normalised.

It may be the World Cup, but how global is the "world game"?

Keith Parry

In 1863, the newly formed English Football Association (FA) drew up and published the first Laws of the Game of football. The aim was to provide a set of universal rules to govern the various forms of "football" that existed. But it is unlikely that these early lawmakers would have predicted that 150 years later the sport would become a global behemoth.

The game's world governing body, the Fédération Internationale de Football Association (FIFA), claims that 46% of the global population — or 3.2 billion viewers — watched at least one minute of the 2010 World Cup in South Africa. English club Manchester United has suggested that they are followed by around one in ten people globally.

While such claims need to be taken with a pinch of salt, football's worldwide appeal is clear.

It is not just off the pitch that football seems to be scoring goals. FIFA's Big Count survey suggests that 270 million people are involved in playing or officiating the sport. This figure has grown by 9.5% since the last (FIFA-conducted) survey, and probably carries more weight than the previously cited numbers.

A truly global game?

Football has traditionally been popular in its heartlands of Europe and South America. While growth in these markets may have slowed, the increased globalisation of the game has opened up other regions.

A trip through Bangkok's Suvarnabhumi Airport hints at the popularity of the sport in Asia. Alongside, Cartier watches and

Dior fragrances one can also buy (perhaps less fashionable) Leicester City Football Club replica shirts.

Leicester City is just one of an increasing number of football clubs with owners based in countries such as Thailand, Malaysia or Indonesia. Other European clubs commonly visit the region on tour, playing against local teams in stadiums packed with fervent local fans. The English Premier League has, in particular, looked to cash in on a passionate Asian following by holding a Premier League Asian Trophy every two years since 2003.

Africa has long been recognised as a source of footballing talent. Successful showings at World Cup finals by African teams bring the talented players of these countries into the global shop window.

African players are also seen as cheaper alternatives to "home-grown" talent and are lured abroad by the prospect of success and economic stability. However, it is only a small minority that attain these goals, with many struggling to forge a career in a foreign land.

However, despite being the world's two most populous nations, China and India boast only one World Cup appearance between them. China's solitary effort in 2002 resulted in elimination at the group stage, after losing all three games without scoring a goal.

And yet, in their economic guide to the 2014 World Cup, investment bank Goldman Sachs suggests that China and India are football's future growth markets.

You say "soccer", I say "football"

The spread of the game has met with local resistance in two regions. Until 2005, the North American, Australian and New Zealand national associations all included the term "soccer" rather than "football" in their names.

Australia and New Zealand have both recently embraced "football" as a term in a bid for increased integration with the global game. However, the Canadian Soccer Association and the

United States Soccer Federation have stood firm. In all of these countries, football has typically come off second (or even third or fourth) best to sports that are regarded as more traditional.

In the US, "football" is typically reserved for American football. Along with baseball, basketball and motor racing, American football leaves association football behind in terms of popularity. A total attendance figure of 2.25 million for the country's professional association football league, Major League Soccer, is dwarfed by the 75 million attendees that Major League Baseball attracted in 2013.

Recently, the popularity of association football in America has been helped by a string of high-profile players such as David Beckham and Thierry Henry moving there in the twilight of their careers. American investment in European football clubs, including Manchester United and Liverpool, and an increasing number of top European clubs choosing America as an alternative pre-season destination, have also boosted the profile of the sport.

Participation in association football in the US, particularly by children, has grown since the 1970s. Where once the sport was derided as fit only for those who were too wimpy or cowardly to play one of the more traditional American sports, globalisation and immigration have helped football to establish itself. Participation levels even suggest that the US now has the second-highest number of players in the world.

In Australia, the term "football" (or footy) can mean many things. In the southeastern, central and western states it is likely to be Australian Rules football. In the northeast, football is likely to refer to rugby league.

In terms of spectator attendance, the A-League lags some way behind the AFL and NRL. Yet in participation terms, this trend is reversed: Football Federation Australia puts it at almost two million players in Australia.

It has been a difficult road for association football in Australia. For long periods, it was seen as an immigrants' sport

and termed "wogball" — a racial slur aimed at those who played it. Former Australian captain Johnny Warren captured such views on association football in the title of his 2002 book *Sheilas, Wogs and Poofters*. For those accustomed to the physicality of rugby league or Australian Rules, association football was seen as effeminate and alien.

In Australia and the US, it may be that the characteristics of football that were once mocked and derided are actually its greatest strength. With growing concern over the long-term dangers of more physical sports such as rugby league, American football and ice hockey, safety-conscious parents are increasingly likely to push their children towards association football.

The real growth area

There is one area for growth that can be forgotten in discussions about football.

While football in Australia was historically viewed as a sport for "sheilas", women's participation does not reflect this. Of the 270 million participants claimed by FIFA only 29 million are women. In Australia, the FFA puts the number of female participants at around 100,000, which is only one in five of all registered participants.

These figures can, and should, be viewed positively as participation by women has grown steadily in recent years. However, when female participants in some countries are still discouraged and threatened, much work clearly needs to be done.

Explainer: the offside rule

Fabio Serpiello

The offside rule is perhaps one of the most controversial rules ever applied to football.

We only need to look to Mexico vs Cameroon on day two of the 2014 World Cup. Thank god for the 61st minute goal by Peralta, otherwise a nil-all draw would have been hard for the Mexicans to digest after two controversial offside calls denying a deserved lead in the first half.

In simple terms, the rule (or "law" as FIFA calls it) explains that a player is considered offside if he or she receives the ball while being "beyond" the second last opponent (usually a defender).

Indeed, the official text of Law 11 of the FIFA 2014/2015 Laws of the Game states, in a very straightforward manner, that:

> It is not an offence in itself to be in an offside position. A player is in an offside position if he is nearer to his opponents' goal line than both the ball and the second-last opponent.

There are a couple of exceptions, though — there's no offside offence if a player receives the ball directly from a throw-in, goal kick or corner kick.

A player is not in an offside position if:

- he is in his own half of the field of play or
- he is level with the second-last opponent or
- he is level with the last two opponents.

Why have the rule at all?

The offside law is not a modern creation. A primordial version was already present in the first issue of football laws created by the English Football Association in 1863, but the law sanctioned any player who was found ahead of the ball, probably making the game very static (not to mention confusing).

The offside law was still enforced when the International Football Association Board (IFAB) was created in 1886, and adopted by FIFA upon joining the IFAB in 1913.

After receiving a tweak in 1990, the law continues to be slightly modified to make its interpretation easier for the assistant referees (the official title of the linesmen).

So, can such a simple rule generate a century-long controversy, forcing FIFA to change it numerous times since its introduction?

It appears to be so, and some resounding examples of flag mistakes still make football fans upset all over the world.

One of the most famous controversies remains the goal scored by Cameroonian footballer Samuel Eto'o, then playing for FC Barcelona, in the 76th minute of the 2006 UEFA Champions League final between FC Barcelona and Arsenal FC.

With Arsenal leading 1–0 in the final half, the game could have been very different if the offside had been correctly sanctioned.

Those mistakes can not only change a football game, but can also signify a loss in revenue of €3–4 million — such is the difference between winning and losing a final.

Refereeing: it's a tough job

In all fairness, quick actions such as the one that led to Barcelona's equaliser are not easy to judge for the assistant referees.

Now we also have some growing evidence of the science behind making a decision to sanction or not an offside … and it's not easy business!

Almost 15 years ago Raoul Oudejans and colleagues from the Vrije Universiteit in the Netherlands attributed the cause of offside judgement errors to a problem in the optical perception of the players due to the visual angle of the assistant referees.

This was a first attempt to dispel the common myth between football fans that assistant referees make mistakes due to the fact that they have to continuously move their vision from the attacker-defender couple to the player passing the ball, as then confirmed experimentally.

Later, Werner Helsen and colleagues from the University of Leuven in Belgium refined the explanation of offside mistakes by focusing on the so called "flash-lag" effect, where an object moving fast (such as the attacker) is perceived ahead of its real position when the observer is prompted by a sudden stimulus (the ball being passed by a midfielder).

Despite this apparent perceptual disadvantage in their job and the constant social pressure, assistant referees only judged incorrectly on 10% of the occasions during the 2006 World Cup.

Having said that, not even science can explain some of the most unbelievably missed offside calls, such as the episode in FC Schalke 04 vs FC Basel in the 2013 Champions League.

That's a mystery, and is probably why offside will remain controversial for a long time and will supply precious material for jokes, TV commentaries and fan rivalries.

Many have called for the introduction of an official video review, similar to those successfully implemented in other football codes.

It's hard to tell if FIFA will say yes to that. Perhaps giving football fans the possibility to be an assistant referee through videogames or virtual reality applications concurrently with major tournaments could help everyone to better understand the "human" side of offside … something worth considering.

Gamer disclaimer: virtual worlds can be as fulfilling as real life

Michael Kasumovic

Step aside Olympians — the new sporting pursuit of choice may soon be professional gaming. Electronic sports (or esports) are now mainstream, drawing more than a million viewers in large tournaments and offering prizes up to US$5 million.

Unsurprisingly, pro-gamers practise for around 10 hours a day, but non-professionals can also spend hours in front of a screen, forsaking real life. Are they missing out? Can a virtual life be equally or more fulfilling than a real one? And should gamers power down and feel the grass beneath their feet?

Some research from the past weeks sheds interesting light on gaming's effects on life, work and school — and it's not all bad.

More than 1 billion gamers served

A restaurant without returning customers won't last long, and video games and their developers are no different. Among game genres, the massive multiplayer online role-playing game (MMORPG) is the McDonald's of customers served.

MMOPRGs are defined by having no ending and simply continue into more difficult quests that require higher levels and a greater amount of collaboration.

Excelling at these games thus requires a significant time commitment and a large online social group to grind the higher levels necessary. It is reasonable to assume, then, that these games devour the free time necessary to maintain an offline — or "real life" — lifestyle.

Forthcoming Australian research in the *Australian Journal of Psychology* surveyed 1,945 gamers over the age of 14 and explored

whether MMORPGs were associated with relatively greater life interference and psychopathology.

What they found is not surprising — MMORPG players played for significantly longer and were more likely to play every day. What was surprising, though, was the mental anguish these players felt.

They couldn't imagine life without their game, felt irritable when not playing and had recurrent thoughts about playing while not playing. Most interestingly, they played even when they didn't want to. They felt that their work, study and relationships were affected, as they had fewer offline social interactions and friends.

But there are two ways to interpret these results:

1. MMORPG players are missing out on what non-gamers would call "real life", so they simply feel awful about it
2. MMORPG players feel bad about spending so much time playing online because society views it as a waste of time.

The results don't allow us to distinguish between these two possibilities, but it's important to do so because they highlight two separate problems; one is with individuals and the other with society. To understand where the problem lies requires exploring who it is that plays these games and why.

Is an online friend just as sweet?

If games are an opportunity to escape reality, then they are also a way to escape uncomfortable social interactions. There is evidence that shy individuals prefer online spaces because they offer them more control over social interactions. As a result, it suggests MMORPGs may serve a purpose for many gamers.

In a German study published last month, researchers explored whether individuals who spent more time gaming online differed in their emotional sensitivity. The also examined the extent of their friends in both an online and offline environment.

What they found was that shy individuals had more online friends who they also met with offline. They also transferred more

of their offline friends online. In other words, shy gamers are using online social environments to establish and maintain their friendships in a manner that is comfortable for them.

Should we then deny shy individuals a modicum of comfort just because society views online time as a life squandered?

Leave no child behind

As adults, we gained enough experience to understand how to navigate various time requirements and should not feel guilty about how we spend our free time. But children don't have this experience. Should we regulate their game time to ensure no negative effects on school performance and friendships?

Three studies published this year shed some light on this question:

The first, examining 192,000 teenagers in 22 countries, showed that academic performance in science, maths or reading wasn't affected by playing single or multiplayer games.

A second study examining 27,000 middle-schoolers (12–13 years old) in France showed that videogames did not decrease cognitive ability, regardless of the type of game played (but children that read more showed a slightly improved cognitive ability).

And a study of 4,899 UK middle-schoolers showed that children who played for less than an hour a day had increased prosocial behaviour and life satisfaction and a decreased internalisation and externalisation of problems. These effects were reversed for those who played for more than three hours, so too much game play might be detrimental.

Together, this research suggests that children are largely using their extra time to play videogames and as long as they don't forsake other duties, they'll be fine. I could have used this evidence when I was growing up.

Spend 100 hours in their gaming chair

Taking the usual caveats about studies with self-reporting, the studies I mention above suggest that we're all not doing too badly. We're creating online spaces that make people feel more comfortable, and potentially even helping them to navigate social environments they previously feared. Could that be a bad thing?

These studies also demonstrate that the best thing we can do for our kids is to teach them to navigate technology. Variety is the spice of life, and demonstrating this variety is the responsibility of adults.

And when kids become adults, if they decide that spending their time playing online is most satisfying, well, rather than asking them to walk a mile in your shoes, maybe we should spend some time in their gaming chair to understand how they really feel.

The app trap: how children spend thousands online

Joanne Orlando

For many parents who caved into the pressure and splashed out on a new tablet computer for their children this Christmas, the not inconsiderable initial purchase bill may almost be a distant memory.

Yet the increasingly dollar-driven nature of the app marketplace will ensure the pain continues to be applied squarely to the hip pocket. Deliberate marketing to young children means that parents will doubtless face surprise bills for in-app purchases their children have unknowingly bought online.

A survey in 2012, from global information company NPD, shows overwhelmingly that children's favourite pastime on their device is using apps. While many apps for children are free to install, app developers are using clever tactics to get our money in other ways.

The app trap

Most commonly, free apps are finished very quickly, meaning children will want the sequel, which just happens to cost money. Other are dotted with advertising, such as Baby Learns Numbers which disguise the ads as a cute panda in the game. When the child clicks on the character at different times during the game the ad appears.

Of more concern is that many new apps are now rife with in-app purchases to help their developers turn a profit, such as Tap Pet Hotel and Tiny Zoo Friends.

Most of these purchases are add-ons you can buy within the app — for example, in Tap Pet Hotel, buying treats and coins for the pets. In-app purchases can also include virtual currency, new features or extra lives (a particularly desirable option for young children struggling to master a new game).

These in-app purchases are a clear revenue stream for app developers looking to cash in on their "free games", as children can spend a small fortune on purchases without their parents' knowledge, oblivious to the small fortune being drained out of their credit cards.

Parents left with the bill

During a recent radio talkback discussion on which I was a guest, parents rang in with extraordinary tales of their children's accidental and expensive online spending.

One parent divulged that his six-year-old had spent A$700 in 15 minutes upgrading to new levels using in-app purchases.

There have recently been a number of high profile media stories regarding young children's online over-spending. One five-

year-old in England recently racked up £1,700 (A$3,100) in ten minutes playing a free game Zombies vs Ninjas.

While his parents stepped out to do a touch of gardening, the boy had ordered additional weapons to battle the zombies – weapons that cost as much as £69.99 (A$129.99). His mother only found out when she was contacted by her credit card company. You can just imagine the look on her face when it dawned on her just what had happened.

Microsoft recently surveyed British parents on their children's in-app purchases on smartphones and tablets. Of the 2,000 adults surveyed, 28% said that their little ones had made in-app purchases without their knowledge.

Eight-year-olds caused the most financial damage, spending an average of A$115 without permission. Much younger children are not left out of this equation, with 36% of parents admitting to paying for content bought accidentally by children aged four and under.

Revenue making

In-app purchases have become firmly established as a revenue making strategy for developers. A study by Distimo, a Europe-based app analytics company, found in-app purchases account for 76% of all US iPhone App Store revenue and at least 90% of all revenue in the Asian markets.

While in-app purchases are not inherently wrong, the problem is that some apps give clear warnings that you're about to spend money, while others do not.

One investigation by Develop, a European-based gaming organisation, found that less than 33% of apps offer clear warnings. It added:

> Some developers even claim their games are "completely free", despite later asking players to stump up for power ups or tokens priced as high as £69.99.

The Australian Competition and Consumer Commission (ACCC) has acknowledged that while a lot of app stores require a password and give a warning before an app or in-app content is purchased, there is a loophole period of 15 minutes when additional purchases can sometimes be made without having to enter the password again.

Protecting the family finances

So, parents are now stuck in the invidious position of wanting to give their children the opportunity to play these devices, while at the same time preserving the family's finances.

Children are prolific users of technology and these devices are fantastic for children's learning and entertainment. But the current marketing environment is clearly exploiting children's inexperience and trust.

A key to addressing this situation is the need for parents to monitor their childrens' use of their tablet devices. Restricting in-app purchases with a password or pin, protecting your passwords, using parental controls, and unlinking your credit card from your account are all useful preventative measures.

Equally important is explaining to children the pros and cons of in-app purchases. Part of this discussion should include the variety of reasons in-app purchases are included in games.

But placing the complete onus on parents to control this situation is illogical. With children spending several hours a day on digital devices, expecting parents' continual and unabated monitoring is unreasonable.

It also becomes less of the answer when, as the Microsoft survey revealed, 77% of parents stated they know only as much — or less — about technology than their children do.

Industry must take responsibility

It's clear the technology industry itself must take responsibility on this issue. Some of these apps operate via text or websites, but the majority are purchased through accounts with app stores such as

Apple's iTunes or Google's Play, so these multinationals must take some of the responsibility too.

Apple recently reached a settlement in the US that will see it offer families free iTunes vouchers for any refund claim of up to US$30, and cash for any claim above that.

But there needs to be more than a band-aid measure in place when things go wrong. The fact that you are able to spend hundreds or thousands of dollars on a mobile phone game which is obviously aimed at children a worrying new norm in this industry.

The ACCC recently joined around 50 other agencies to identify apps that may mislead young children into making unauthorised in-app purchases. This is an important step.

But we also need rules that stop bait pricing on children's games in the first place. Money warnings could be provided at the start of games and to indicate it is an in-app purchase game, and caps should be installed on how much can be spent on such purchases within an hour or within the game, which can only be removed by the cardholder.

Parents also need to be notified of any time loophole that does require a password upon each use of their account and the option to turn that loophole period off.

Until the regulations governing apps and their purchase systems are strengthened, the number of parents who receive a rude shock when they see their latest credit card statement will only continue to grow.