3.1 Small-sided games and competition

Team sport coaches often used small-sided games as a physical development tool to prepare players for competition.

In justifying the use of small-sided games, coaches often state "*If players play with the ball, we should also train with the ball. The best way to transfer training components to the game is to replicate the specific demands of competition. Therefore, using a ball and match situations through small-sided games is a way to do that.*"

The facts are that there are pros and cons that come with using small-sided games. A very interesting concept used by some coaches is that they develop physical qualities through standalone physical training (which means training without the ball), and then use small-sided games to teach players how to *compete*.

Open and Closed Skill Activities

We developed a project (Farrow, Payne and Gabbett 2008) where drills were divided into open and closed skills. A closed drill is where the skill is pre-planned and predictable. There is no real decision-making component and the outcome of the movements are known every time they are performed. On the other hand, an open skill is where situations are unplanned, it requires decision-making, and is therefore quite chaotic.

In this project we designed three different closed drills. We counted every skill involvement (i.e. every touch of the ball) during the six-minute drill (running in line from one side of the court to the other and passing the ball in a 3 *vs.* 0 situation).

The *open* six-minute drills that we designed had the same type of behavior for the attacking team (3 men in a team) but instead of it being unopposed, we inserted 2 defenders into the drill trying to steal the ball. Thus, it was an

open drill, which involved unplanned and reactive motor actions. We also counted the skill involvements (i.e. "touches") in those drills.

At the end of each drill, we used the video footage to count how many decision-making opportunities were in each of the drills. We also asked players, how "cognitively demanding" each of the drills were. In this respect, "cognitive demand" refers to the amount of "thinking", "visual scanning", "remembering", "decision-making", and how "game-like" each of the drills were.

Table 1: Skill involvements (i.e. number of "touches") during Open and Closed drills.

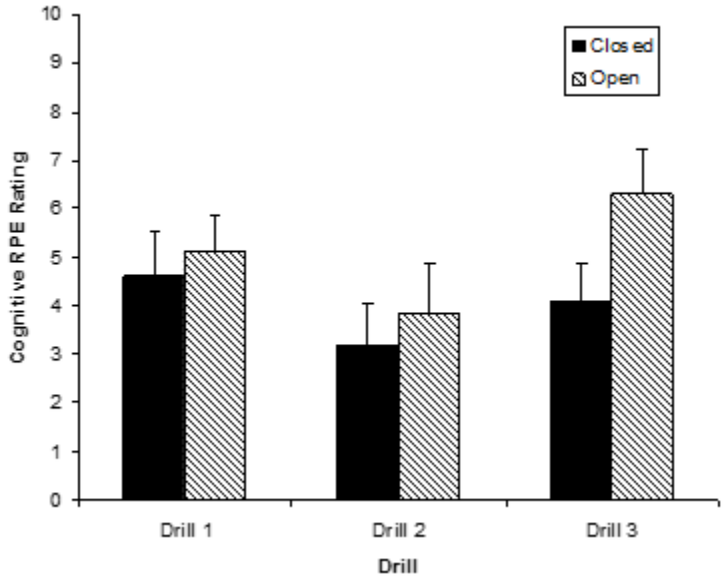
Skill demands of each of the three drills in both open and closed formats.

	Open	Closed
Total Disposal (n)		
Drill 1	331	728
Drill 2	230	417
Drill 3	174	122

Source: Adapted from Farrow, Pyne, & Gabbett (2008).p.490.

Table 1 shows the results from these drills where "disposal" refers to the number of "touches" or skill involvements. In a six-minute window, players performed 331 "touches" on the ball for the open version of drill 1. On the other hand, the closed version of the drill provides more than twice as many "touches".

Figure 1: Cognitive demands comparing opened vs closed drills.



Source: Adapted from Farrow, Pyne, & Gabbett (2008).p.492.

Figure 1 shows the cognitive demand (i.e. the mental challenge) of each of those drills. In this respect, players are providing an indication of how "game-like" they found the drills. The open drill was more mentally challenging, had more "thinking", more "remembering", more "decision-making", and more "game-like" than anything we saw in the close drills. There are two key findings: (1) athletes gain more "touches" in the closed drill but (2) each one of the "touches" in the open drill is far more mentally challenging, far more game-like than anything obtained in a closed drill.

Table 2:

Skill demands of each of the three drills in both open and closed formats.

	Open	Closed
Total Decisions (n)		
Drill 1	241	0
Drill 2	120	0
Drill 3	174	0

Source: Adapted from Farrow, Pyne, & Gabbett (2008).p.490.

Table 2 shows the decision-making opportunities in each of the open and closed drills. In a six-minute drill there was over 200 decisions in the open version of the skill (see drill 1). When defenders were added into the drill, to make it unpredictable and chaotic (i.e. open skill), there was 240 individual decisions. When we compare that with the closed version of the drill, there was absolutely no decision-making opportunities because everything was pre-planned.

If we want to develop effective decision-makers in team sports, then we need to provide opportunities for our players to make decisions on a regular basis. As a coach, if you consistently use closed skill activities, then opportunities to develop decision-making in your players are reduced.

In order for players to make good decisions in competition, they need to train that ability and be exposed to decision making opportunities on a regular basis.

How Do We Maximise the Transfer of Skill?

So, how do we develop these drills that help the skill that we teach in practice actually transfer? How do we create these good decision makers? How do we create flexible and adaptable skills?

The first thing we need to ask is: "*Are our skills being taught in a game context?*" Not all skills and drills have to be a game but where possible it is important to expose players to the kind of pressures that are going to influence the execution of the skill.

So, the next question is: "*What are the pressures that influence the execution of skill for a particular player?*"

There are different variables that could influence the execution of skill. For example, it could be time, space, fatigue, scoreboard pressure, the number of defenders. All of these factors can influence the execution of the skill, so the next question you need to ask is: "*Am I exposing my players to these factors on a regular basis?*" Again, as a coach, if you know the pressures that influence the execution of skill and players are not being exposed to those kind of pressures on a regular basis, then we shouldn't be too surprised to see that the skills we are practising in training aren't transferring to competition.

Of course, skill level is going to impact the kind of pressure that we build into our training program. If we have a six-year-old child, the pressure in those type of drills is completely different from the kind of pressure that we would want to build into a first team player who is playing in the Champions League. But we still need to look at the game and look at the kind of pressures that influence the execution of the skill and then go back and look at our training drills. *How well do our training drills reflect what players need to do in competition?*

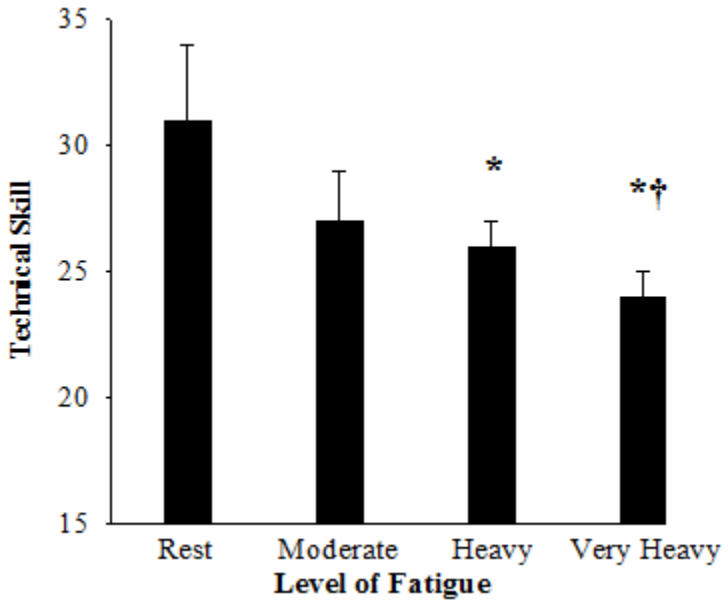
I'll provide an example of how we have used this approach when assessing and training the skill of tackling in our collision sports (e.g. rugby union, rugby league, American football).There are some technical cues involved in the skill of tackling that can be assessed as part of a technical skill battery. For example, these cues involve (1) making contact under the ball (i.e. in the attacking player's center of gravity), (2) the defending player having their weight forward of their feet, (3) speeding up into the contact zone, (4)

ensuring the body position is squared and aligned, (5) watching the target onto the shoulder.

These are all coaching cues that can be used to assess the skill of tackling (similar cues could be developed for skills from different sports). This information can be easily transferred to football (e.g. passing), or basketball (e.g. shooting)..

One of our questions that arose as part of our assessment of tackling was: "what actually happens to tackling ability under fatigue?" What happens to tackling skill level when players are placed under fatigue?

Figure 2: Fatiguing effect of tackling.

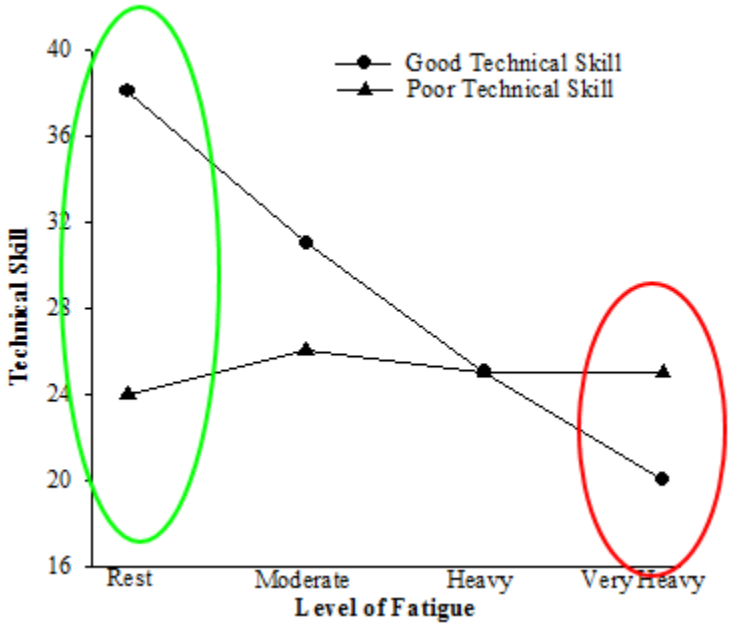


Source: Gabbett 2008. P.627.

Regarding the data showed in Figure 2, we developed a physically demanding drill based on the repeated effort demands of the game (i.e. we created scenarios to replicate those demands). We assessed players under resting conditions, when they were not experiencing fatigue, and again under moderate, heavy, and very heavy levels of fatigue As expected, when we analyzed tackling ability, there was a reduction in technical skill under high levels of fatigue.

Again, we are able to look "inside" the average data and examine the individual response. We took two players who were closely matched in terms of physical qualities. They had the same aerobic fitness, same anthropometric characteristics, and same strength. One player had very good technical skill under resting conditions, he was our "good tackler". The other player had poor tackling ability under resting conditions.

Figure 3: Fatiguing effect on tackling ability in two players of different skill level.



Source: Prepared by the author. Unpublished

Despite having very similar physical attributes, the responses to fatigue were quite different. The player with "good tackling" skill under resting conditions had a massive reduction in performance - to the point where his performance under very high levels of fatigue was actually lower than our player with "poor tackling" skill.

These results have important implications for the way we test and the way we train skill. Firstly, assessing a player's skill under resting conditions (i.e. in a non-fatigued state) probably won't provide a true indication of how that player will perform under pressure (in this case fatigue).

Secondly, when assessing skill, it is important to consider the factors that influence the execution of skill. Unless this is performed, it is unlikely that one will obtain a true understanding of how that player will perform during the demands of competition.

Finally, we had two of our fittest players who were closely matched for physical qualities (Figure 3). However, just because the players are "fit" doesn't mean that our job is done! We still need to work to try to maximize transfer of that skill and fitness into game-specific skill. Equally, if a players' skill "breaks down" under very heavy levels of fatigue, it doesn't necessarily mean that the sole responsibility falls on the conditioning coach. Coaches also have a role in helping players execute under those high levels of pressure, and fatigue. What I am highlighting is *not a silo approach to physical development, or to skill development.* ***An integration of the coaching team with the conditioning staff is needed in order to maximize the physical qualities developed, and to maximize the transfer of skill.***

So – in terms of small-sided games, how well do they prepare players for competition demands? How well do they prepare players for the *most demanding passages of play* – the "worst case scenario"? Going back to our time-motion analysis, we can see how well each of our training and preparation activities actually prepare our players for the demands of international competition.

Figure 4: Small sided games vs the demands of international matches.

	Small-Sided Games	International Matches	ES
Relative Distance (m/min)	114 ± 14	106 ± 10	0.66
Low-Speed Activity (m/min)	91 ± 14	80 ± 6	1.02
High-Intensity Running (m/min)	23 ± 6	26 ± 6	0.50

Source: Prepared by the author. Unpublished

Figure 4 shows the physical demands of small-sided games (performed in training) versus international competition. The data shows the (1) average demands (in meters per minute), (2) low-speed activity and (3) high-intensity activity.

Firstly, the average intensity of our small-sided games was higher than international competition. Thus, *on average* it *might* be concluded that small-sided games are effective for preparing players for the international demands of competition. However, if we look a little closer, the data tells a slightly different story! While the average demands of small-sided games was higher than international competition, this intensity was actually brought about by *more low-speed activity*.

These findings suggest that players do more walking and more jogging in small-sided games than they do in international competition. In fact, when we observe the high-intensity activity, it is lower in small-sided games than what occurs in international competition.

Figure 5: Repeated-sprint demands of small-sided games and international matches.

	Small-Sided Games	International Matches	ES
Number of bouts (per player)	1.0 ± 1.3	4.8 ± 2.8	1.74
Number of sprints (per bout)	3.3 ± 0.5	3.4 ± 0.8	0.15
Duration of sprints (s)	2.1 ± 0.8	2.1 ± 0.7	0.00
Recovery between sprints (s)	7.7 ± 3.1	5.8 ± 4.0	0.53
Recovery between bouts (min)	31.4 ± 12.7	20.1 ± 8.3	1.05

Source: Prepared by the author. Unpublished

Let's look a little deeper (figure 5), at our most demanding passages of play (i.e. repeated-sprint demands) that occur in small-sided games and international competition. On average, players will perform almost five repeated-sprint bouts across the course of a 90-minute football game, but in small-sided games they only perform one repeated sprint bout (figure 5).

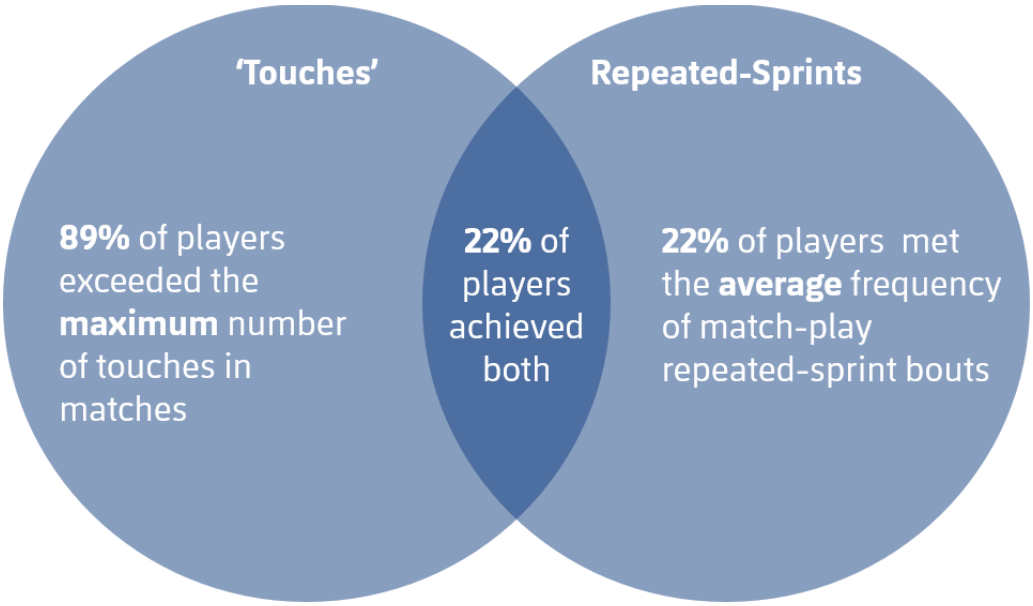
If we express the data per minute of training or match time, on average in the international women's football game, players are required to perform

one repeated-sprint bout every 20 minutes. In small-sided games, players only perform a repeated-sprint bout once every 30 minutes. Thus, small-sided games can replicate the *average demands* of competition, but they don't adequately replicate the repeated high intensity sprinting demands of competition.

Consideration should also be given to the fact that small-sided games are not only used to replicate the physical demands of competition; they are also used to develop technical and tactical skills.

How well do small-sided games replicate the *skill demands* of international competition? Figure 6 shows how well small-sided games replicate *both* the skill and repeated-sprint demands of international competition.

Figure 6: Skill Involvements & Repeated-Sprint Demands



Source: Prepared by the author. Unpublished

In terms of "touches" on the ball (i.e. skill involvements), when players use small-sided games, almost 90% of players will exceed the *maximum* number of touches that they will perform in international competition. Conversely, when using small-sided games, only 22% of players met the *average* demands of repeated-sprinting that is required in international competition. When comparing *both the skill and repeated-sprint demands*,

only 1 in 5 players were able to obtain adequate "touches" on the ball and repeated-sprinting.

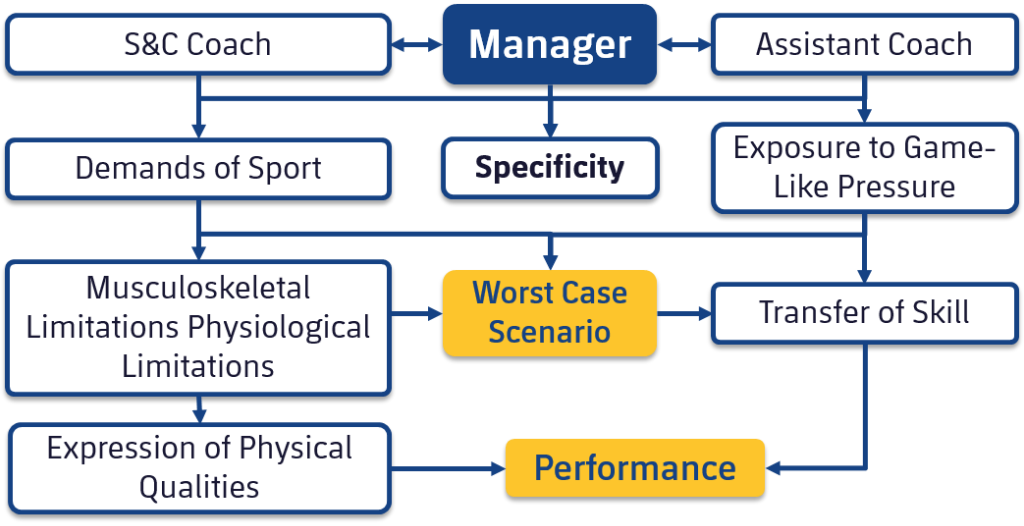
This data demonstrates that small-sided games may be effective for enhancing skill development opportunities (i.e. "touches" on the ball), but it is likely that it will be ineffective for enhancing repeated-sprint ability.

To date, I have presented small-sided games and "standalone conditioning" as an 'either-or' approach. The reality is that the best programs don't just use standalone conditioning or training with the ball to develop physical qualities. They use a combination of both to develop the tactical and technical skills of the players while also giving players the physical attributes to perform the task.

Skillful performance is constrained by physical limitations. In other words, even the most skillful players require physical attributes to execute those skills; aerobic fitness to maintain the intensity of competition, change of direction speed to evade opponents, speed and strength to accelerate into space.

Figure 7 is a model of how skill and physical development can fit within a team sport environment.

Figure 7: The integration of physical and skill development staff within a team sport environment.



Source: Gabbett (2015), p. 11.

Firstly, the manager or the head coach oversees the program. He is ultimately responsible for the delivery of a good program, and having players who are fit, and skillful enough to perform the role. At either side of him are the performance/medical team, and the assistant coaches. Both of these staff work together to make training as specific as possible. The performance team and the medical team study the demands of the sport, including the "worst-case scenario". They identify either musculoskeletal or physiological limitations and strengthen these areas. The goal is to improve the players' ability to perform those most demanding passages of play. Ultimately, what they want to see is the expression of physical qualities (e.g. speed, aerobic capacity or muscular power), expressed throughout the game.

On the other hand, the assistant coaches obtain specificity in their training by exposing players to game-like pressure. When players are exposed to this game-like pressure, it provides the best possible chance of transferring that skill into competition. *Either one of these approaches in isolation are less effective*. ***It is the expression of physical qualities and the transfer of skill that ultimately leads to improved performance.***

References

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