



**COACHING
SOCCER
WEEKLY** WITH
TOM MURA



Creating a Technical Training Plan



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We've had a number of coaches ask if we could create printable show notes. Earlier this week I started working on doing that. I've put together a template using the first episode and posted that to the site. Now that I've worked out the technical side I'll start adding them to each episode. I'll also go back and add them to the previous episodes. So far I've completed five episodes going back to Episode 12 on the Transitional Possession Game. I'll get the others done during the rest of the summer.

Please let me know what you think of those and if there's anything you'd like to see done differently. I take your comments and requests seriously because they will give you more of what you're looking for which can only improve the podcast.

In the last couple of weeks I've been working on things to get ready for next season. In addition to coaching teams in the club. I'm also the Skills and Curriculum Director for the U8-U12.

I take this responsibility very seriously because what these young players learn now directly effects their future development. We do something that I think is fairly unique that I believe will make a huge difference in the technical ability of our players so I thought I would share our process with you in this episode.

Technical Training

I think most coaches and club directors would agree, that proper technical training should be the primary focus of our teams in their early years of development.

Unfortunately, coaches sometimes focus too much on elements that would help the team win today, rather than help the players develop in the future. This loss of focus can happen because of pressure to win from either the coach themselves or from parents and players. As a club, we decided to make one of the two training sessions each week strictly a technical training session. The purpose of this obviously is to increase the ability of our players, technically, and provide a foundation for these players further developing them in the future. Those U8 to U12 years are so important, to develop those technical abilities and then the coaches can build on with tactical elements, physical elements and then you are getting into creating an environment where the players are training to win and training to compete. This was best put by Gary Allen from the Minnesota Youth Soccer Association in an article he did on developing a coaching philosophy that I really like and it says quote, "just as it is necessary for builders to cut deep into the ground for a foundation of tall building, so are you laying the groundwork

for the future. No one looks in at the gaping hole that is dug or ever sees the concrete laid for building foundation once it is built. But in order for a beautiful and majestic building to rise, this solid but unseen foundation is necessary."

I think that's so powerful and really describes the coach's role when we are talking about players in those early stages of development. We also looked at this as an opportunity to create an environment where the players would get an equal opportunity to be exposed to technical training, regardless of which team they are playing on. Whether it's a first team or fourth team and so on. And we did this because of feedback that we had from parents saying "Look, I know these players are going to be exposed to these different things because he is friends with my son, but my son hasn't been taught those in his practice." So by organizing it the way that I'll describe, would make sure that players at all levels were getting an equal opportunity to be exposed to the training and these techniques. We also looked at it as an opportunity for coach education. Basically teaching the teachers and making sure that all of our coaches were familiar with the key coaching points of each technical activity and could do them well.

Though obviously we hope that this is accomplished through coaching education courses and things like that, but it's our responsibility at the club level, to make sure that this is happening and to give refreshers. There are always different ways to present technical ideas and so doing it in this environment that I'll describe here, is a way to do that. The way we organize this, is we took one practice a week, our team normally train twice a week, so the first practice of each week is dedicated to technical training. Now, we've got the luxury of having all of our age groups train together at the same time, the same days, on the same fields. If we have so many teams that they spill over to multiple fields, we have those fields situated next to one another that it's easy to do different things and technical training is one of them. So on the first day of training each week, we have all of the players and all of the teams in the age group all be on one field. And if we have, say, some of our age groups we have six different teams, we'll divide them into groups of three or four teams, occasionally we have an age group with eight to ten teams within an age group.

So to make sure that all players are training on the same level, we have the first three teams train together or the first four teams train together and then so on down the line. So we are creating groups. We did this because, we kind of transitioned into doing it more as a station training format rather than a complete training session, run by one coach

with one team. We would have four different coaches, each one would be responsible for one of the skills for that day. The teams would move as a unit, so the first team would train together, move from one station to the next. So when the coach had the first team, they knew that they could progress these activities a little bit more quickly. Perhaps they had the fourth team so they had to regress some things, make things a little easier, make sure that the players are performing the techniques correctly and maybe not as much of a challenge to them. So that they can get success with that and they could understand more of what we are trying to teach.

The way we plan this, and I'm in the process of doing right now this summer, is we look at these as micro cycles.

We basically create a four three-week micro cycles. So we've got 12 week technical training plan. We progress these activities from isolated technical skills into functional techniques as the player's progress through it. And as they get older it becomes even easier and more functional. We decided to make these functions multi theme sessions rather than progressive training sessions. In this way, we are working on a number of different skills within each session and that the players can then start and finish at any of the stations without it really affecting the flow of the practice. So we decided we have five activities within every training session. We have an hour and half practice, so that allows for basically 15 minute groups, in 15 minutes of skill working at each station and then with water breaks and players moving, then you end up with about 20 minutes left for the 4 v 4 game at the end. So basically four skill activities followed by the 4 v 4 games, at the end made up our five activities for each session. The technical focus we decided to have, would be on dribbling, passing, shooting, turning, receiving, heading and then we always end with 4 v 4 game. The 4 v 4 game is not a technical activity, but I'll explain later why we've included those.

So those are the technical areas that we decided to focus on. We very specifically stayed away from activities like 2 v 1 and 5 v 2 those kind of activities that have a tactical element to them and much more of a tactical focus. And decided to really hone in on the technical elements and drill down to make sure the players are performing each technique correctly. Players at different ages obviously have different focus that they should have on the technical training. So with our U8's we decided to go first with the engagement. So always having an engagement activity, some kind of fun game at the beginning of the practice, whether we are stuck in the mud, or pirates in the sea, or

some kind of fun game that when the players arrive, they know going to play a fun game at the beginning of the practice. So we get them engaged, we get them focused on what we're doing, we get them excited about being at soccer practice in the first place. Then we focus with the U8's on ball control and striking. Those are the two main areas that we going to focus on. Under ball control, we'll start with the ball feeling exercises, the touches with the inside outside sole of the foot, to get them familiar with the ball, comfortable on the ball and start with those basic touching activities or basic ball moving activities and then start to progress those into rhythmic dynamic activities as we go along.

We also focus on dribbling. Dribbling with the inside outside sole of the foot. Change of directions moves. We have four change direction moves that we do. I'm sure that different coaches call them different things, we call them a "BOB" or ball-out-of-bounds move from the cover techniques. So a BOB, a hook, a chop and a crunch. Those are four change of direction moves that we focus on. Then we focus on six 1 v 1 moves. Again, they're 6,000 different 1 v 1 moves. We've chosen six, we do step over, scissors, Matthews, a drag, maradona and of course a fake shot. So we've got those six moves that we focus on under ball control. Now with striking technique, we're talking about passing technique and shooting technique. With passing, it's about locking the ankle with the toe up and out, foot next to the ball, having balance and striking through the ball. Now they're very similar focuses when you're talking about shooting technique. Again, you're talking about locking the ankle, but this time with the toes down and diagonal, so you're striking with the laces, and foot next to the ball again, balance and then follow through with landing on the shooting foot.

So those are our focuses with our U8 groups. When we go to U9 and U10's group we group that together. And we start with a rival game. It may be a fun game as before with the U8's. It can also be small side game. Anything from 1 v 1 games all the way up to 6 v 6 games, just to start, get the players engaged and again get the having soccer activities soon as they arrive at the field. We also do ball control with them, focus on passing, shooting and turning. And with ball control it's the same idea that we did before, dribbling, change of direction moves, fake some moves, moves to beat a player. With passing we get into static passing, dynamic passing, so passing and moving and then passing patterns as well. Whether they be diamonds, triangles, squares. So passing patterns to get the players passing and moving and seeing patterns, so that they start to recognize those within the game. Shooting, we start to start to look at the same things

did before. Obviously, techniques are important. But we start to look at different demands. Shooting from different angles, different types of passes, whether the pass is coming towards the player, across the player, and they're receiving it and turning it towards the goal, but again focusing on specifically the technical aspects of all these activities.

We also add turning into the curriculum at the U9 and U10 level. Different types of turns, the four which is to focus on a back-foot turn or an opening-the-gate turn, an inside the foot turn across the body, outside of the foot turn across the body and a cruyff turn behind the standing leg. Now, when we get to the U11s and the U12s, again we're still building on all the things that we've done in U8 and U9 and we still drilling down and focusing on passing techniques and dribbling techniques and shooting technique and heading and so on. Now we have added at this age group, we start to add things like heading technique, and receiving the ball out in the air, so aerial receiving technique. With our dribbling and 1 v 1 and change of direction, now we get into some 1 v 1 situations. Again focusing on the technique, not focusing on necessarily the defending, not focusing necessarily on the tactical elements of 1 v 1, nearly so much as getting the players comfortable so that their approaching defender with good touches, using the move early, playing away from the pressure and getting the shooting opportunity. So those kind of things in 1 v 1.

We're also adding pressure to our shooting activities, whether it be pressure of time, pressure of space, pressure on opponent coming either a passive pressure to begin with or an active pressure. With our passing activities, we're starting to incorporate more and more patterns so that we're doing less and less in isolation and less and less static and we're starting to a lot more in diamonds. And we have used of wine-glass formations that you'll see in Dutch training, in order to get the players passing and moving. But now again, in ways that they're going to see those things happen in the game. We always end the sessions with the 4 v 4 game. We didn't do this in the beginning. The first year, we just focused on technique and really used all of our an hour and half training time to focus on those technical aspects, but we found that we weren't giving the players something to look forward to towards the end of the session, as we were at the beginning with the fun game. So adding a 4 v 4 game at the end, kind of accomplishes the fun factor. It also by drilling down and just doing the 4 v 4, we have the core elements of the game.

We've got the shooting, passing, dribbling, support, we've got all of those things happening, but in a very small format, so the players are getting lots of touches. And we looked at ways to do these 4 v 4s, and we looked at the Manchester United 4 v 4 scheme that they put together some years ago. And I'll include this in the show notes so that you can see the different elements of it and article was written about it. But when we're doing these, we're focusing on four different games. We're focusing on end zone game, a four goal game, a two goal game and a game with keepers. By doing those four different games, we're training different things while we're giving them different methods to score. With end zone game, we're talking about, sometimes with end zone games, or so you can only score by dribbling to the end zone. Next week we may come back and say it's now just passing in to the end zone, either without offside, meaning that the forward can get into space before the ball is played. Or incorporating the offside line into that by saying the ball has to be played before you get in, this is with the older players as we move along, but with the U8, say when we're playing the 4 v 4 end zone game, it can just be dribble to get in the goal. Because we want them to focus on dribbling to beat a player. So that will be the only scoring method.

With the older players, we get into passing like I said, with offside or without. And then we'll also give them the choice. We can say, you can score by either method, dribble in or pass in. At that point we are usually using the offside law, because that's more functional to the game. With the four goal game, it's all about switching plays in it. It's all about attacking one goal, when the defense slides over, you try to learn to then attack the other goal. So even with the youngest players, then we're doing that 4 v 4 game at the end, we're looking for the technical aspects. But then with that game we'll start to talk to them about looking where the space is? Where is the pressure? Which goal is open? Those kind of things. With the two goal game we're talking about attacking with one point rather than two and now they've got to learn switch plays and attack different sides of one given goal. And then by adding goalkeepers at the end, now we've got all of elements of the real game. Shooting, passing, dribbling, goalkeeping, so we've got everything involved.

The reason we went with 4 v 4 is in large part also not just to Manchester United scheme, but also a study that was done in Scotland in 2006, that looked at the 4 v 4 games versus the 7 v 7 game, versus the 11 v 11 game and not surprisingly found that you got more touches, more passes, more time with the ball in play, more activity for the goalkeeper, it was more fun for the players, the players felt like they improved more by

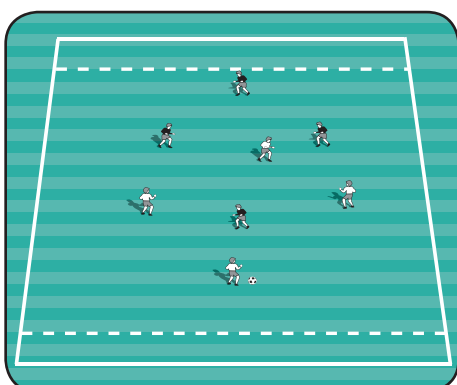
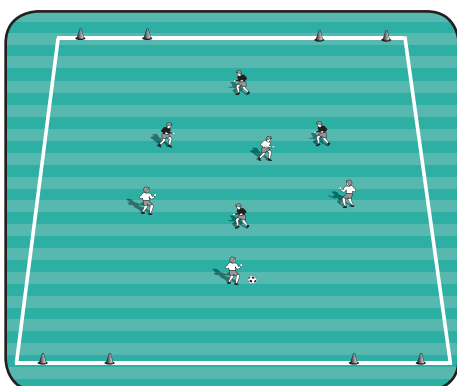
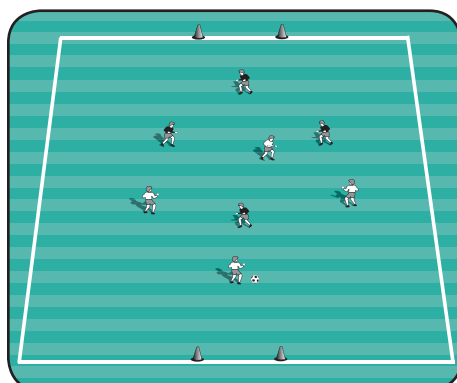
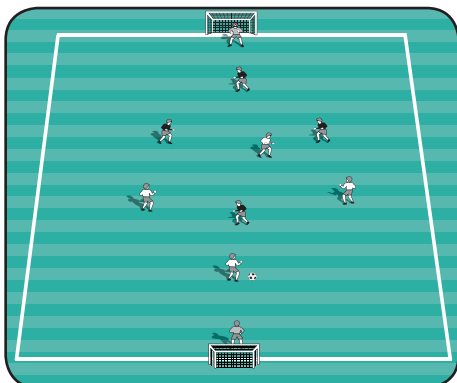
playing the game and they also felt like they felt less pressure from the outside while playing this game. And I'll include that study in the show notes so that you can see that. But because of those two studies, we decided that 4 v 4 was a great way to end our technical session, while still having an emphasis on the tactical aspects of it. What we're looking at are the coaches while these games are going on. We're looking at are the players improving in the aspects that we worked under in practice. So if we going to focus on moves with the younger players then we going to look at are they using the moves early enough to beat the defender? Are they using proper technique? Are they having a good play touch to create separation from that defender? Are they creating and they're getting an understanding of what's going on within the game? Are they seeing how it's important to switch the field in a 4 v 4? Some understanding going along with the technique.

And we'll progress this whole activity from the fall to the spring. With our technical training in the fall, we'll go through that curriculum I just described. In the spring we'll come back with the 12 week curriculum. And what we'll do is we'll take the U8s and we'll bump them up to the U9 and U10 curriculum. Maybe we have to regress some of those activities, but we want to make it different than the spring or the fall. So we want to progress it, but at the same time we don't want to progress it too much. So we carefully monitor how quickly we go, how well the players doing. By creating these groups that I described, where it's four teams together, you've got four coaches that are looking at the players as they go through the rotations. So they can see what those groups need. How they are progressing. Maybe we need to alter something if a group is progressing slowly or maybe progressing very quickly. We need to alter those.

We'll take the U8 and U9 and U10 curriculum in the spring. And then we'll take the 9s and the 10s and obviously do the 11s and 12s curriculum. We'll come with the U12s, we'll create a special curriculum for them in the spring that will be more focused on functional environments with these skills. So we're getting into more activities that they're going to see in the game, but still drilling down and focusing on the technique while we're doing it. During the four years that we've learned technical training sessions, we've seen a steady improvement in our players in each of the areas of focus. Parents have been more satisfied that their child is receiving the same opportunities as everyone else in the age group. Coaches have seen improvement in their players so that they better appreciate the importance of technical training. The coaches have improved the sessions with ideas and feedback as well. While working on techniques it's not the

players' favorite practice activity, we continue to see more engagement as we make changes to our methods and organizations overtime.

This article, contributed by Rick Fenoglio, discusses the grass roots movement called, 'Give Us Back Our Game'. Fenogilo founded the movement along with Paul Cooper to create an environment that removes nearly all of the influence of parents and coaches, leaving the players to take responsibility for THEIR game. The format is based on the scheme that Les Kershaw put into place with Manchester United while he was the Academy Director. This article originally appeared in INSIGHT magazine.



Academy coaches around the world have identified many of the characteristics that make 4 v 4 an excellent training method for young players. The goals of this article are to highlight the key features of a bold and innovative 4 v 4 games format and to contribute to the ongoing discussion about the future development of young players and youth football.

Initial Developments

Les Kershaw, the former Academy Director of Manchester United Football Club, was granted permission by the FA Premier League to play an alternative under 9's games format in the Northern Academy Football League. Instead of playing a single 8 v 8 competitive match, players of teams agreeing to take part in the scheme are divided into teams of four, and then play in four different conditioned small-sided games on a rotational basis. The four different games are:

- **Goalkeepers Game:**
4 v 4 plus two Goalkeepers. Normal throw-ins and corner kicks apply.
- **Two Goal Game:**
4 v 4 with four large traffic cones as goals. No goalkeepers.
- **Four Goal Game:**
4 v 4 with eight marker cones as four small goals. No goalkeepers.
- **Line Ball:**
4 v 4 with a dotted line as a scoring line.

Re-Creating the Environment

A fundamental concept guiding the primary developers of the scheme - Paul McGuinness, Assistant Academy Director, Tony Whelan, Deputy Assistant Academy Director and Rene Meulensteen, the MUFC Skills Development Coach - was an attempt to re-create, as much as possible, the playing environments in which the world's greatest players first learned and then developed the skills they needed for top-level performance. To accomplish this, the scheme has incorporated some of the competitive values and best features of youth football as it used to be played in the parks, playgrounds, streets and back alleyways around the world, into the more formalised structure of modern Academy football. These features, known to most players, include:

- Plenty of individual possession, ball control and touches
- Trying new skills without fear of ridicule or recrimination
- Taking players on and challenging defenders
- Little or no pressure from significant others (parents, coaches, etc)
- A vibrant, creative and fun atmosphere

By initially re-evaluating the traditional 8 v 8 games format from the perspective of the experiences of the young player, the scheme has attempted to re-balance the dynamic of the match day programme and give more ownership of the play back to the young players themselves.

The Format

Besides the training benefits noted by Allpress, there are several other innovative characteristics to be found in the MUFC scheme:

Program

The games format is adaptable and can easily accommodate up to 68 players, including goalkeepers, at very short notice.

Teams

No player sits out any game; and, because of the varied 4 v 4 formats, teams of four from the same club may even play against each other!

Substitutions

If a team has more than four players then substitutes are brought into the game on a strict rotational basis.

Game Duration / Referees

Each game lasts for eight minutes and there are no referees! By refereeing themselves, player cooperation is fostered and the young players consistently learn to take more responsibility for their own actions.

Scoring / Goals

Because so many goals are scored in the conditioned 4 v 4 games, scoring itself is de-emphasised and no scores are recorded. Except for the Goalkeeper's Game, the use of cones instead of real goals and nets re-directs the emphasis of the games back onto build-up play and technical execution.

Playing Time

Each boy plays a minimum of six games and there is a minimum two minute break in between each game for rest, re-hydration and game organisation. This work-to-rest ratio increases energy levels and mental awareness during competitive play.

Pitch Layout / Viewing Areas

The 'roping off' of pitches and the control of viewing areas purposely ensures that the influence of parents, fans and others is kept strictly

to a minimum. MUFC parents are routinely briefed on the aims and underlying philosophy of the scheme.

Coaching

The MUFC coaches are responsible for the day-to-day implementation of the scheme and its player-centered values. Interestingly, there is very little overt coaching performed during competitive matches – no raised voices, no disciplining and no playing-the-game-for-the-players. Instead, consistent encouragement and praise is given to players of both teams for brave attempts and creative decision making.

Related to Training

Underlying this novel approach to the games format is the technical and skills development programme of Manchester United. In short, 4 v 4 matches are the focal point for the systematic technical training and 'skills homework' undertaken by the club's U9 youth team members. In training and in matches, players are routinely taught to take the initiative, take players on and 'show their tricks'. On the pitch, players are repeatedly encouraged to make their own decisions. It is also considered that players who are routinely instructed to play simply will, eventually, be only able to play simply. Players at this age, it is felt, need time and encouragement to build the toolkit of skills they will use in future years.

Assessment

In order to evaluate the scheme's overall effectiveness, MUFC openly requested and received ongoing written feedback from home and visiting team coaches, players and parents; and from representatives of the game's ruling bodies, amongst others. Staff and students from Manchester Metropolitan University also collected match data during Academy matches and, experimentally, on U9 players from a local development team (F.C. Alderley Edge), as well as additional qualitative information.

Summary

The MUFC scheme is an exciting pilot programme that is attempting to optimise the 'window of opportunity' that exists for skill development in the U9 age range. Great players learned and perfected their talents in secure, vibrant and challenging football environments. In the advancement of a way forward for young players as they progress up to full 11-a-side football, the benefits of 4 v 4, and the playing environments in which competitive matches take place, require careful consideration.

SMALL-SIDED GAMES STUDY OF YOUNG FOOTBALL PLAYERS IN SCOTLAND

INDEPENDENT CONSULTATION PAPER
Grant Small, University of Abertay Dundee

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SMALL-SIDED GAMES RESEARCH STUDY

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SMALL-SIDED GAMES RESEARCH STUDY

1.1 Introduction

We (The University of Abertay Dundee) conducted the following research by means of an observational analysis of small-sided games in Scotland. The purpose of the study using video analysis software (prozone) as our observational analytical tool was to collect data to compare the 4 vs. 4 game to the 7 vs. 7 and 11 vs. 11 game for U12 players.

The basis for the research was due to several factors;

- Scotland has used the small-sided game as the preferred tool for developing young players for over 15 years and it is time to review the evidence for this strategy
- Part of the debate is the appropriate age that young players should move to the adult version of the game
- There had been very little or no previous Scottish research using observational methods
- Much of the previous research was based in the USA and England and was not always relevant to the Scottish system
- Previous studies were basic in analysis and detail

This study will provide an overview of the research that was conducted and will summarise the results from the study. It is hoped that the findings will inform the current debate and provide recommendations for future policy directives as well as creating a base for further research into the age and stage of young players development in football.

1.2 Background

More than fifteen years ago the move towards small-sided football was discussed at national level. In particular, the then, current Technical Director of the SFA, Andy Roxburgh (now Technical Director for UEFA) pioneered the small-sided game as the best means of developing the game for children. The small-sided games principle was based on sound educational and developmental evidence. Children learn in a progressive and sequential way using a building block approach. According to existing research the belief is very much that the 11-a-side game is a game designed by adults for adults and should be seen as the last part of the learning journey. Therefore, the 7-a-side game is the intermediate step and the 4 v 4 game is the first step in the ladder.

According to current research (Winter, 2005; Insight, 2004; Manchester United, 2003), the ability of children to make decisions in a difficult, ever changing environment will be dictated by their developmental age, their preparation and the complexity of the situation. Professional educators and football coaches from

around the world are agreed that the small-sided game is the best developmental tool for under 13's considering all the information. Also, the use of the 4 and 7 a side games are the best means of teaching the technical and tactical [decision making] parts of the game in preparation for the adult game.

Many believe that the large size of an eleven-a-side pitch, even at its smallest dimensions is too big for children due to the fact that they spend large amounts of time running around or standing still without even touching the ball with very limited passing interaction as well as skill and technical development. The limited time a child touches the ball will not allow appropriate time to develop the basic skills of which many of our international counterparts carry out so successfully. Ultimately, this will result in relatively low skill levels amongst young players in Scotland, which in turns leads to a number of children becoming disenchanted and leaving the sport.

In Scotland today, the PMP (May 2003) Youth Football in Scotland: Structure and Development review, Executive Summary report recommends that all football for U12s boys & girls is small sided. However, some coaches still allow children to participate in full-sized, eleven-a-side games. Examples of eight, nine and ten-year old children playing eleven-a-side matches on a full-size pitch is still occurring too frequently and without a definitive, well argued policy, based on evidence, the game will always fail to give young people the most appropriate experience in which to learn our national game.

2. Review of Literature

Skill Acquisition is an essential component of both coaching and the education of children encountering new skills in new sports. An understanding of the basic principles of motor skill acquisition can enhance the process of teaching / learning, and further, is associated with the application of motor control principles, in effect contributing to the factors associated with the successful acquisition of new skills. Skill acquisition goes on to provide information for coaches and performers relating to specific cue indicators, to aid performance during practice and competition.

Dreyfus & Dreyfus (1986) described a model of skill acquisition. The overriding theme associated with this model is related to professionalism in action. This involves knowledge, the application of that knowledge and the decision making process involved with the application of knowledge. As an individual approaches a level of expertise those decisions become more intuitive, less easily understood at a cognitive level. They are less step-wise and more instinctive responses.

The Dreyfus & Dreyfus (1986) model focuses on learning by experience, and the five levels, which describe skill acquisition, are:

- a. Novice
- b. Advanced beginner
- c. Competent
- d. Proficient
- e. Expert

The learning of physical skills requires the relevant movements to be assembled, component by component, using feedback to shape and polish them into a smooth action. Rehearsal of the skill must be done regularly and correctly.

Further to the Dreyfus & Dreyfus (1986) model, Schmidt (1999) identified a further correlation between experience and skill acquisition.

Schmidt's theory (1999) was based on the fact that actions are not stored rather we refer to abstract relationships or rules about movement. Schmidt's schema is based on the theory that that every time a movement is conducted four pieces of information are gathered:

- the initial conditions - starting point
- certain aspects of the motor action - how fast, how high
- the results of the action - success or failure
- the sensory consequences of the action - how it felt

Relationships between these items of information are used to construct a recall schema and a recognition schema. The Recall schema is based on initial conditions and the results. It is also used to generate a motor program to address a new goal. The recognition schema is based on sensory actions and the outcome. It would therefore seem feasible that practice and competition opportunities for children (and youths) must be appropriate to the age and stage of the performer. In football the environment and practice conditions will have a major impact (positive or negative) on the player's learning.

2.1 Transfer of learning

Transfer of learning can take place in the following ways:

Skill to skill, this is where a skill developed in one sport has an influence on a skill in another sport. If the influence is on a new skill being developed then this is said to be proactive and if the influence is on a previously learned skill then this is said to be retroactive. This skill to skill learning can be particularly effective with children due to the diverse range of activity associated with childhood activity.

Theory to practice, the transfer of theoretical skills into practice. In effect allowing children to associate a sound theoretical knowledge of football with the actual practical element associated with the sport.

Training to competition, linking the transfer of skills developed in training into the competition situation, highlighting the need for quality practice and coaching during the educational stage.

2.2 How are faults caused?

Having assessed the performance and identified that there is a fault, there is a need to determine why the faults are occurring. Faults have been identified as being caused by :

- Incorrect understanding of the movement by the athlete
- Poor physical abilities
- Poor co-ordination of movement
- Incorrect application of power
- Lack of concentration
- Inappropriate clothing or footwear
- External factors e.g. weather conditions

For learning to be achieved successfully Magill (1998) found that there are four main characteristics exhibited as learning takes place. These characteristics can be directly related to the teaching and learning of sports performers. The characteristics are: Improvement; Performance of a skill shows improvement over time, Consistency; performance becomes increasingly more consistent over time, Persistence; whereby the improved performance capability is marked by an increasing amount of persistence, and Ability, where the improved performance is adaptable to a variety of performance context characteristics. In order to give effective feedback, a coach is required have a comprehensive understanding of these characteristics and how they affect their athletes learning.

For coaches to achieve the goals of a distributed learning paradigm, it is important to address two critical components of a learning environment; the coach's and the athletes. Coaches who accept feedback as an educational tool must accept this role as being a central cog in the educational wheel. Coaches must consider their athletes; ages, cultural backgrounds, interests and experiences, education levels and familiarity with particular methods of feedback. For a coach to provide effective feedback, a clear understanding of learning is essential. Learning is defined by Magill (1998 p126) as:

"A change in the capability of a person to perform a skill that must be inferred from a relatively permanent improvement in performance as a result of practice or experience"

For various reasons, athletes find particular means of learning more suited to them, and so in effect respond differently to different methods of feedback Salmela (1995). Further investigations by Salmela (1995) found that the response to feedback depended upon the individual athlete, in that some athletes responded to the atmospheres of group discussions (team sports) whilst others preferred practical demonstrations or coach: athlete discussions (individual sports). For a coach to provide effective feedback they must have a clear understanding of different learning approaches commonly demonstrated by learners, whilst having a clear and holistic understanding of the feedback goal.

This concept is highlighted by Salmela (1995) who stated that the education of children within a practical setting was invaluable. Salmela (1995 p.62) found that for athletes to achieve effective learning, this involves *"Physical, technical, tactical and mental components"*. The key concepts of talent identification involve a multi-disciplinary approach considering all these factors with individual desire and commitment being the main one. It is crucial that the coach is aware of this and adapts the content of their training sessions accordingly.

The adaptation to differing methods of feedback can also be related to the discipline of neuroscience. Neuroscience has been found to have a major impact on learning, as discovered by Vygotsky (1996) who suggested that learning is distributed across three interconnected networks; the recognition networks which specialise to receive and analyse information, seen as the “what” of learning; the strategic networks are adapt at the planning and execution of actions, known as the “how” of learning; and the affective networks known to affect the brains ability to evaluate and set priorities, the “why” of learning. Vygotsky (1996) found that athletes cannot simply be categorised as being ‘Disabled’ or ‘Bright’ learners, as each athlete differs within each brain network showing both strengths and weaknesses, whilst covering each of the three networks making every child unique. Scientists have made unprecedented progress towards unlocking the impact neural networks have on learning, driven by new technology and techniques for imaging the brain's activity (Vygotsky 1996). Studies by Magill (1998) have found that one of the clearest and most conclusive findings from neural research is that there are no “regular” learning styles.

As found by Vygotsky different athletes have contrasting abilities throughout the different networks of the brain and so the coach can adapt the content of their training sessions to meet the many strengths and weaknesses of the individual child. Vygotsky (1996) further suggested that it is not advisable to focus on one strong network with any individual child. This principle was highlighted by Franks *et al* (1996) who supported Salmela's (1995) concept of practical learning being crucial to the development of athletes. Franks *et al* (1996) investigated the need for a wide range of coaching evaluation systems to equally meet the strengths and weaknesses of all athletes in order to provide equal feedback opportunities. Franks *et al* (1996) found that there should be seven steps to practical coaching evaluation, ensuring all neural networks are fully evaluated during the learning of practical coaching. Vygotsky (1996) also found that strengths and weaknesses across all three networks interact with the coaching and learning environment in ways that can either bring about progress or frustration. Sometimes a problem in one area can receive so much attention that other issues are missed. These studies have shown that to provide effective methods of feedback coaches should have an effective understanding of these neural networks and the impact upon feedback.

Whilst the learning styles of the athletes has an impact on the coach's ability to give quality feedback, the coach's ability to recall incidents objectively also has a major impact.

2.3 The Zone of Proximal Development

Children should always be challenged during the learning process, Vygotsky (1996) defined a “zone of proximal development” as being crucial to an individuals development. The zone of proximal development is:

“The distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers” (Vygotsky 1996).

The zone of proximal development suggests that all children must have a willingness to learn and a desire to reach their “upper levels of competence” (Vygotsky 1996). It was found however that these upper boundaries are not immutable and that they are constantly changing with the athletes increasing independent competence. Vygotsky’s study concluded that with help “*What a student can perform today with assistance, they will be able to perform tomorrow independently*”, highlighting the learning process.

2.4 Individual Zone of Optimal Functioning

This was later supported by Hanin (2000) who identified an Individual Zone of Optimal Functioning. This concept was designed to apply directly to an athletes performances, intended to regulate their psychological emotions, in an attempt to achieve optimal performance. Whilst Vygotsky (1996) and Hanin (2000) identified the learning states and styles of athletes, the role of the sports coach within the learning cycle was investigated by Siedentop (1991) who found that effective coaching has more to do with the coaches ability constantly observe, analyse, evaluate and modify their coaching to satisfy the needs of the participants within their group.

As previously stated by Vygotsky (1996) and Hanin (2000), the studies found that individuals learn best in their Zone of Proximal Development and perform best within their Individual Zone of Optimal Functioning, where challenge is just beyond their current capacity but not out of reach. Children have been identified as having a comfort zone, whereby the level of difficulty, challenge, and frustration vary considerably. Successful learning depends on a coaches ability to sustain their athlete’s enthusiasm whilst adjusting their own coaching style to constantly challenge other players in the team. However, again, with relevance to this study of the small-sided game the challenge must be appropriate and questions must be asked as to whether or not the use of the full-sized 11v11 game is conducive to both the player’s development and also the coaches ability to set an appropriate challenge to players and to provide a suitable environment for feedback.

It must be recognised by coach’s that athletes often require a target to be set in order to achieve a particular goal. By setting goals, athletes are often forced to complete a task as a deadline is in place. When athlete’s work towards a goal DeShon & Alexander (1996) found that learning takes place in two different ways; explicit learning and implicit learning. Explicit learning takes place when:

“the vast majority of problem solving research examines the ability of individuals to consciously develop a mental representation of the problem, formulate strategies and test alternative hypotheses for the task performance”.

2.5 Implicit and Explicit Learning

Learning can also be implemented via implicit learning. Implicit learning occurs, as individuals are also capable of learning complex rules of system behaviour even when there is no conscious attempt to do so. DeShon & Alexander (1996) defined implicit learning as:

“The acquisition of knowledge concerning stimulus co variation learned through repeated exposure to problem exemplars without intention or awareness”.

While explicit learning requires cognitive resources and is sensitive to distraction, implicit learning is relatively resource independent. Holyoak & Spellman (1993) stated that *“a large domain of tasks are best learned implicitly”*. The learning approach of goal setting is often associated with rewards, according to Lepper & Green, (1978) this however can lead to its own problems. The study found that despite rewards being set for children the rewards on offer were not always a motivation. The study also found that extrinsic rewards were inappropriate and ineffective for long-term motivation. It was discovered that *“Extrinsic rewards can result in unintended negative consequences for learning such as turning play into work”* (Lepper & Green 1978)

2.6 Impact of Fatigue on Learning

As detailed by Barnett *et al* (1973) fatigue has been shown to alter the recruitment pattern and intensity of work of a muscle's motor units. The research found that during the acquisition of a new skill it is best to practice in non-fatigued conditions whether or not the skill would eventually be performed in fatigue, an example being in the final minutes of a football match. Barnett *et al* (1973) further found the establishment of neuromuscular skill patterns is best achieved in non-fatigued states. When a skill is over learned to a desired level of proficiency then it can be practiced under difficult and environmental specific cues, for example whilst experiencing anxiety / arousal or in front of crowds – all realistic possibilities for football coaches.

3. Methodology

3.1 Observational Analysis

Video analysis aims to provide feedback to coaches and competitors with a goal of increasing the desired performance. The athlete's technique can be studied usually at slow speed or frame by frame. Qualitative (subjective assessment - non numerical evaluation) and quantitative (measurement based - provides kinematics and kinetics) feedback can provide a description of movement in detail. Two-dimensional or three-dimensional analysis can be chosen depending on the type of movement patterns.

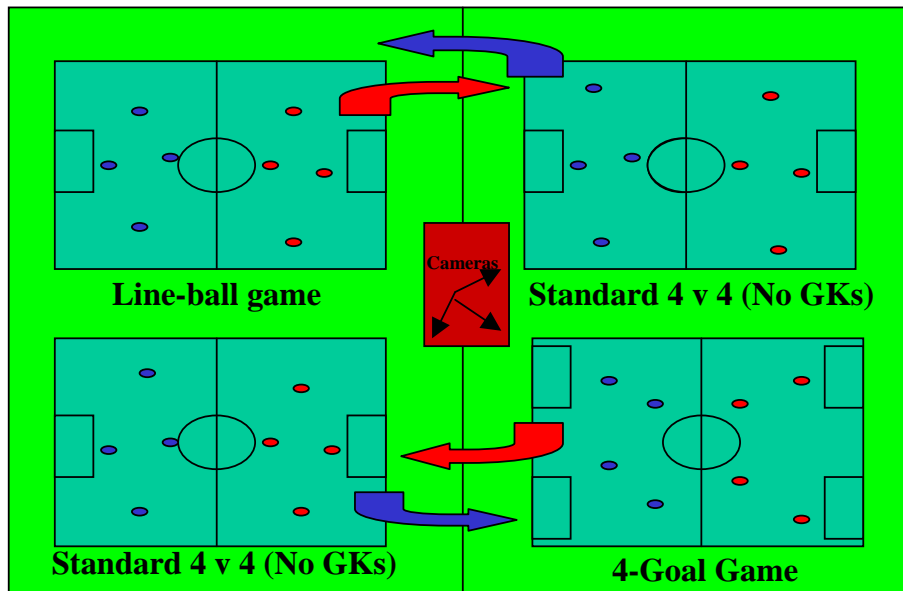
3.2 Set-Up

- √ The games analysed featured children playing organised football in the U12 age-group
- √ Two sample groups were analysed within the study; 1) two Youth Initiative Performance Clubs and 2) two juvenile clubs registered in the local SYFA football league
- √ The study was conducted on exactly the same surface (3-G AstroTurf) with exactly the same weather conditions (fair conditions, no wind).
- √ Initial focus on eleven-a-side games followed by four-a-side and seven-a-side games.
- √ Youth Initiative Performance Clubs played against each other, as did teams from the local juvenile league. This will provide us with two sets of results allowing comparisons between the sample groups
- √ Video cameras were used to record games from a position 6-feet in the air near the halfway line on both occasions. The cameras followed the movement of the ball and the immediate surrounding action for the duration of the games.
- √ Video footage was transferred to a computerised match analysis system. This same data analysis tool was used for all games
- √ Appendix 1 demonstrates the criteria used within the overall analysis
- √ Analysis was based on footage from each game format (4 v 4, 7 v 7, 11 v 11). The 4 v 4 format featured multiple games on four pitches where teams continued to move from pitch to pitch against different opponents. The 7 v 7 format was based on multiple games on two pitches (Two cameras were positioned to capture footage on different pitches in both cases)

- √ The 11 v 11 format featured games against the same opponents in each case
- √ Two squads of 16 players were used in all cases with corresponding numbers (bibs) in every game.

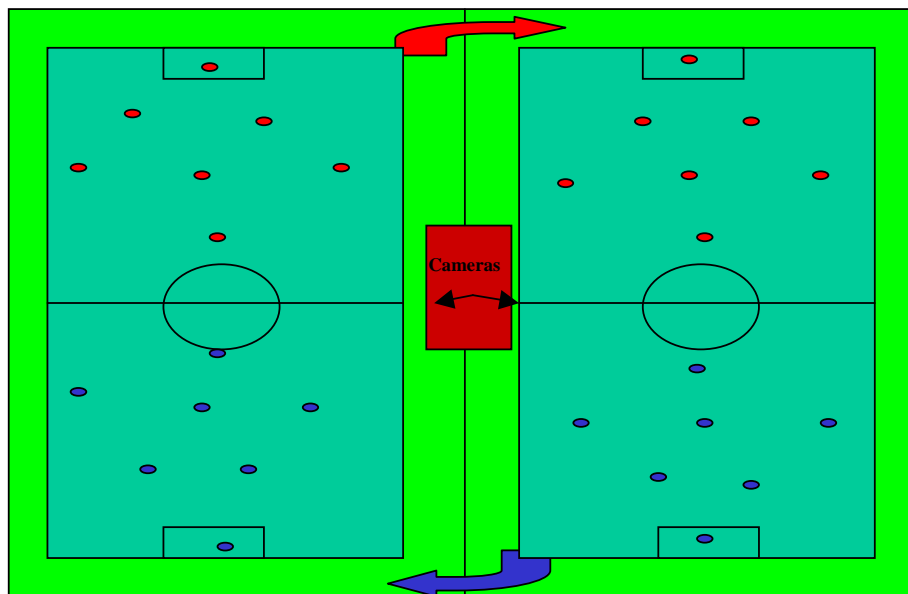
4. Pitch Layout for Small-Sided Games

4 V 4 LAYOUT



PITCH DIMENSIONS: 30 M x 20 M

7 V 7 LAYOUT



PITCH DIMENSIONS: 60 M x 40 M

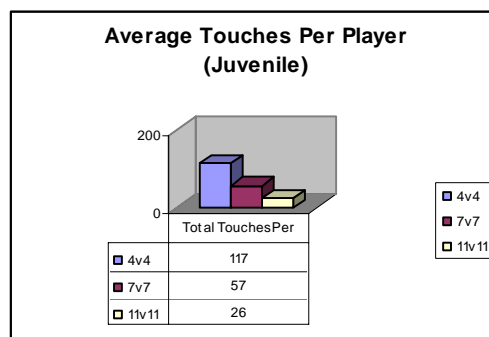
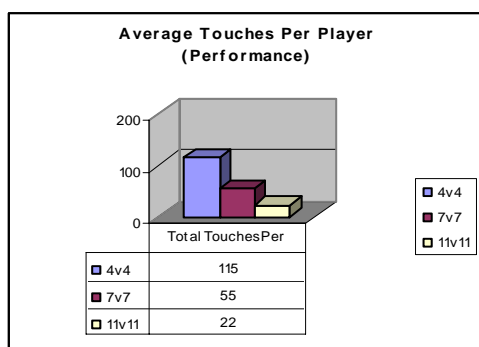
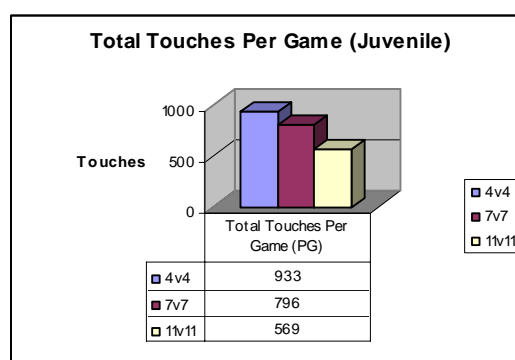
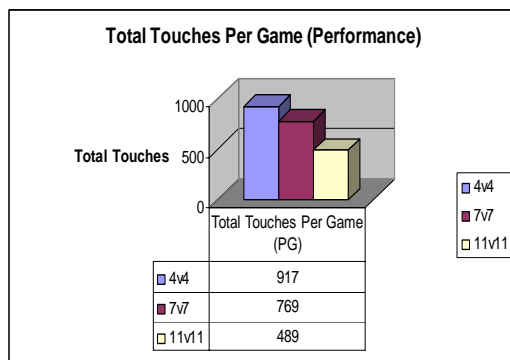
5. Results Summary Section

The information below provides an overview summary of the key findings between the 4v4, 7v7 and 11v11 formats. Although this is not a direct comparison between juvenile and performance clubs in Scotland, the results can be viewed individually. Performance clubs are illustrated in the left-hand column and the juvenile study on the right. A full breakdown can be seen in the results table, which can be viewed in Appendix 1.

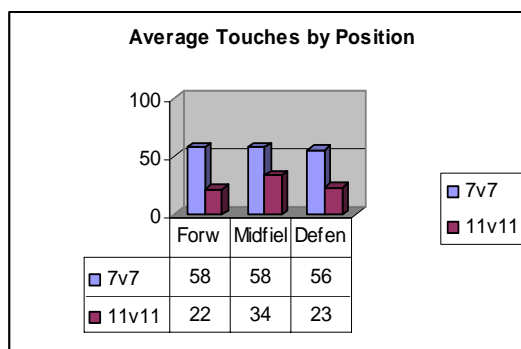
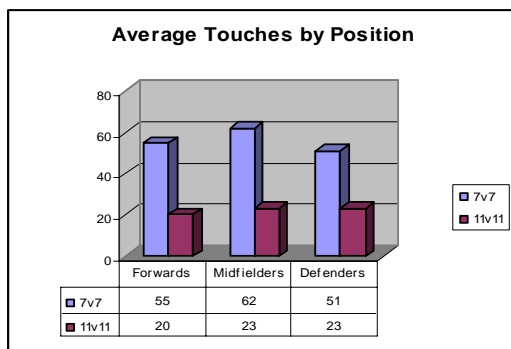
Performance Clubs

Juvenile Clubs

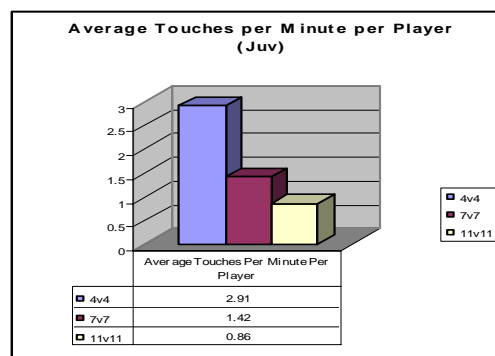
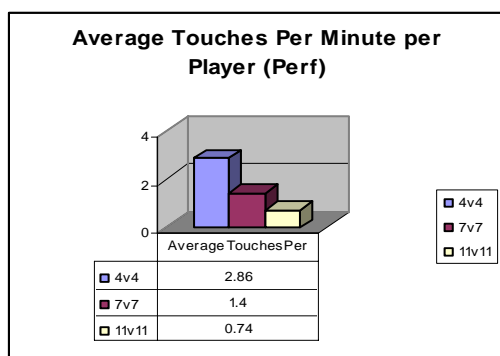
5.1 TOUCHES WITHIN THE GAME



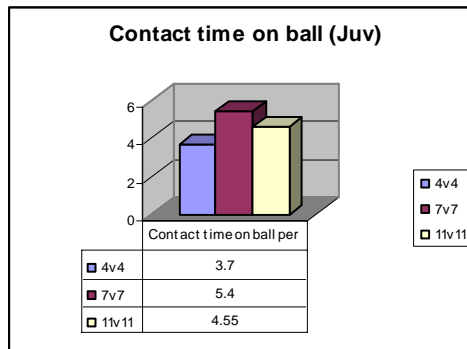
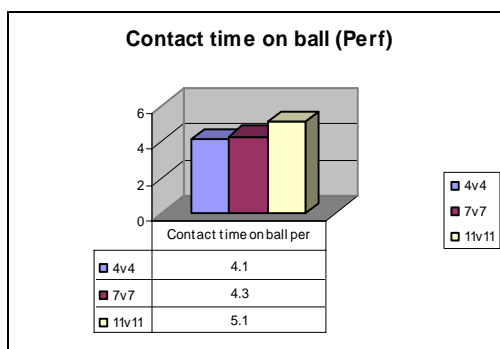
The findings clearly indicate that in both formats players receive repeated touches far more often in the small-sided format (4 v 4 / 7 v 7) than they do in the full-sized game. Children will touch the ball up to five times more in the 4 v 4 format than they will in an 11-a-side game. The differences are considerable as well when the 7 v 7 is compared to the full 11 v 11 game where players touch the ball on average 50% more often.



The analysis for average touches by positions are consistent with the total passes and average touches per player where children in the small-sided games touch the ball far more often than in the 11-a-side game. The small-sided player will touch the ball two-to-three times more often. In terms of differences by position, there are very few differences, however, in the performance club study, midfielders touched the ball more often than any other position – not the case in the juvenile club study. NB. Results for the 4 v 4 game were not considered in this instance due to the fact that positioning is not of great consequence.

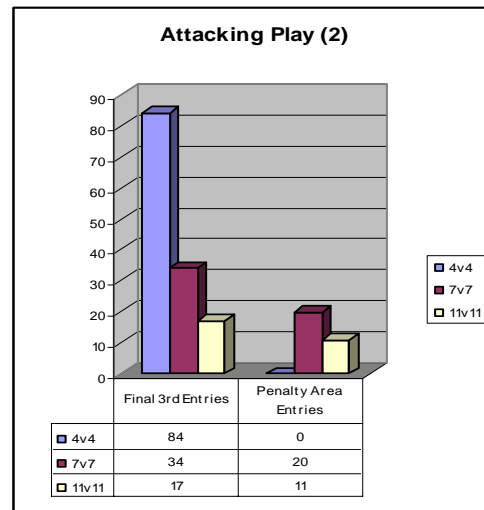
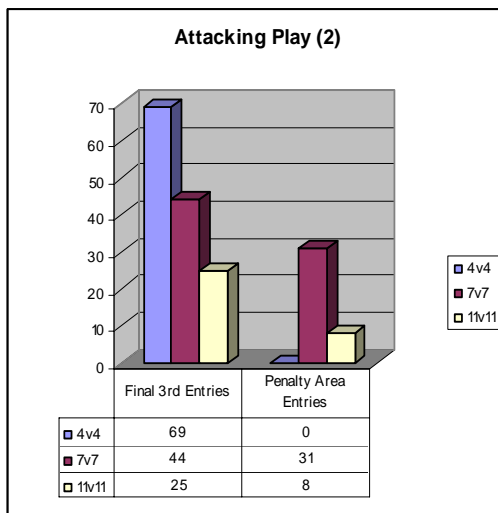
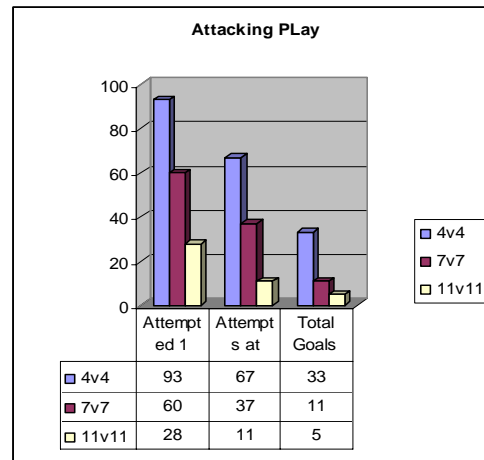
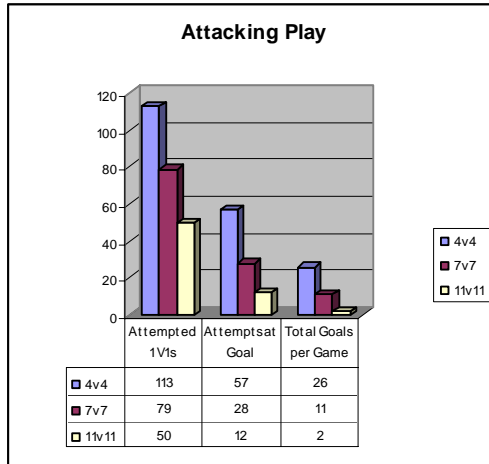


The studies found consistency again where in both cases players touched the ball more often per minute in the 4v4 and the 7v7 games than the 11v11 games. There were no significant differences between the performance clubs or the juvenile clubs.



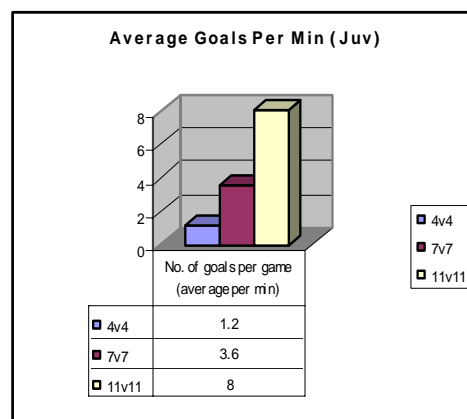
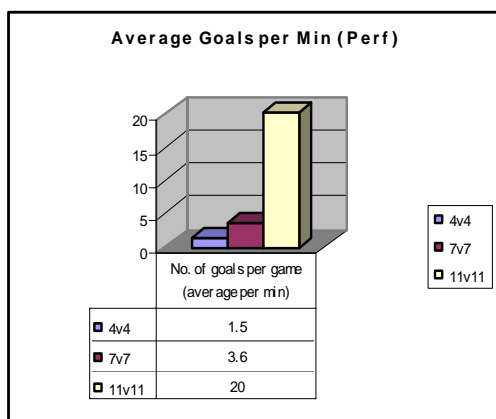
Although there are not significant differences on the contact time on the ball per player between the game formats, in the performance study results do indicate less time on the ball in the small-sided game. However, these results are not conclusive in the juvenile banding and therefore it could be suggested that further studies are required to form some consistency in this area.

5.2 ATTACKING PLAY



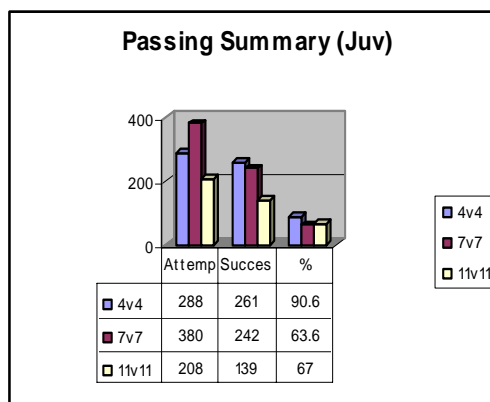
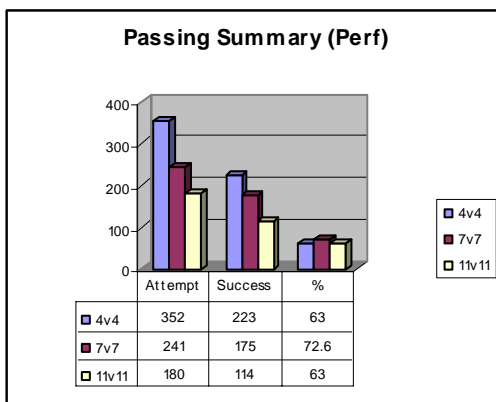
In terms of attacking play it is very clear in both cases that more attacking play takes place in the small-sided game. In attacking 1 v 1s, up to three times more 1 v 1s are attempted between the 4v4 and the 11v11 game. Up to two times more take place between the 7v7 and the full-size game. The total number of shots on goal is consistent with the attacking play differences with more attempted goals and goals occurring in the small-sided games. This is mirrored in the number of final third entries and penalty area entries as well.

In this instance there were some clear differences between the two studies. Key differences between formats were in 1 vs 1 and final 3rd entries, which tended to be around 30% higher by Performance Clubs in the 7v7 and 11v11 games. Although it is interesting to note that there were more attempted shots on goal and actual goals in the Juvenile than the Performance games.

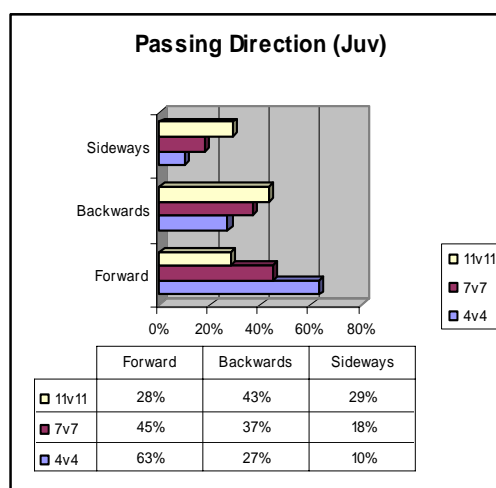
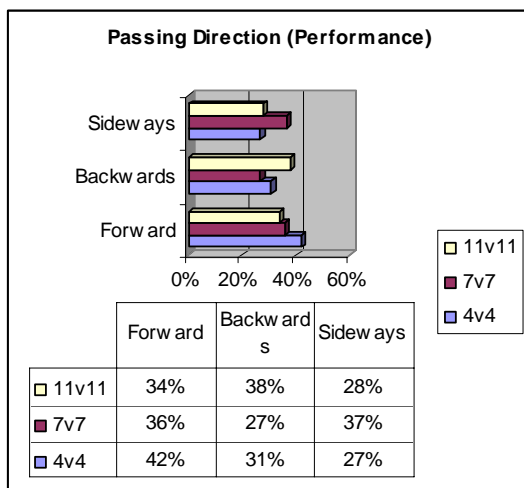


Within the analysis it is evident that far more goals were scored in the small-sided games than the 11v11 format. There was a goal scored on average every 1.2 and 1.5 minutes in the 4v4 games (no goalkeepers). In the 7v7 format this decreased to a goal every 3.6 minutes respectively and even further to one goal every 20 minutes in the performance game and one goal every 8 minutes in the 11v11 juvenile matches. This correlates directly to the technical skills by goalkeepers (below), where it is clear to see that goalkeepers receive more touches, make more saves and general actions in the 7v7 format than they do in the 11v11 games. Technical skills performed by goalkeepers tend to be between two and four times more often in the small-sided game, potentially allowing for better technical development.

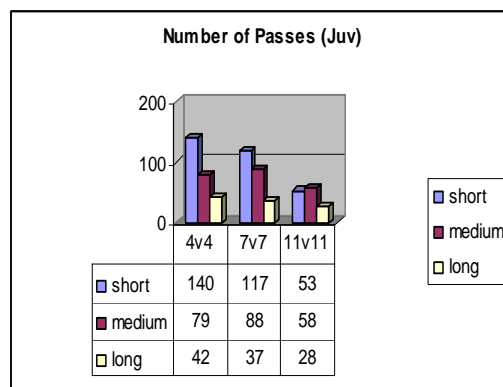
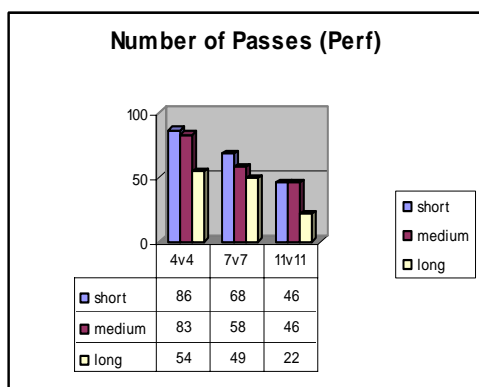
5.3 PASSING SUMMARY



The results above demonstrate the total attempted passes versus the total successful passes per game against the successful pass rate as a percentage. Results clearly show that in the small-sided formats there are far more passes attempted and successful passes than in the 11v11 game. Although it is interesting to note that there is very little difference between the various game formats in terms of percentage-success rates. However, it can be concluded that more passes and therefore more overall successful passes leads to better technique, skill development as well as confidence and enjoyment from young players.



The results clearly show that players are more attacking orientated in the 4v4 game where the majority of passes were made in a forward direction. The 7v7 game also showed an incline towards attacking play. However, in both studies it is clear to see in the 11v11 game that the majority of players are passing in a backwards direction and are less attacking orientated.



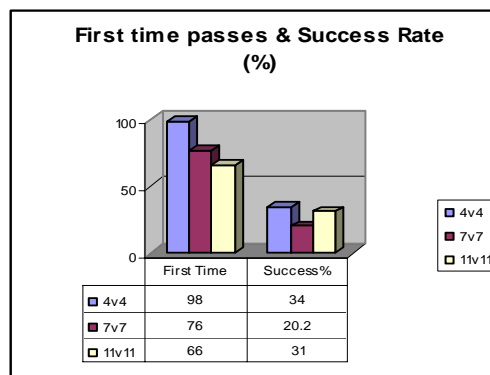
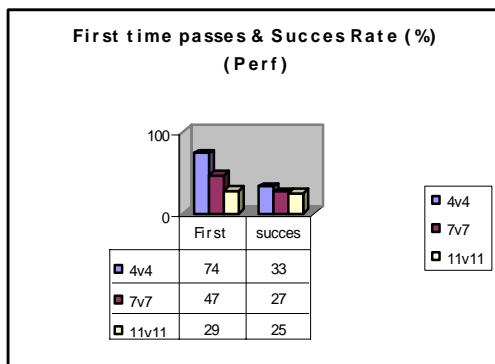
Analysis of passing during the study was completed, with specific measurements being taken according to the pitch size.

4 v 4 – Short (<5m) Medium (5 – 15m) Long (+15m)

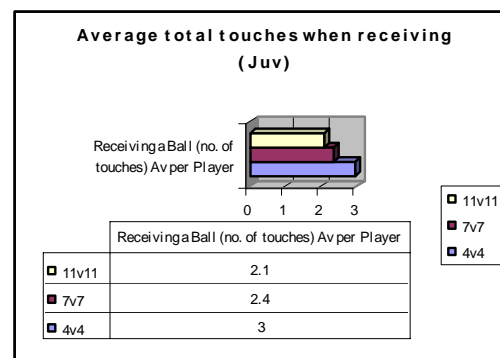
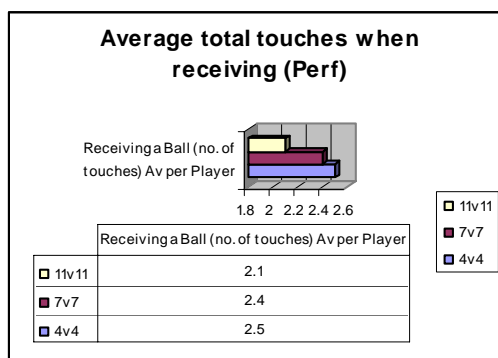
7 v 7 – Short (<10m) Medium (10 – 20m) Long (+20m)

11 v 11 – Short (<10m) Medium (10 – 25m) Long (+25m)

As previously stated the number of passes attempted has a direct correlation to the restrictions applied to the game play. As can be seen from this analysis short and medium length passes show a significant increase during the small-sided games. However, it is important to point out that the software did not allow for an exact comparison between the formats due to the fact that it used a proportional method by scale. I.e. a short pass in the 11v11 game could be a medium pass in the 4v4 game.

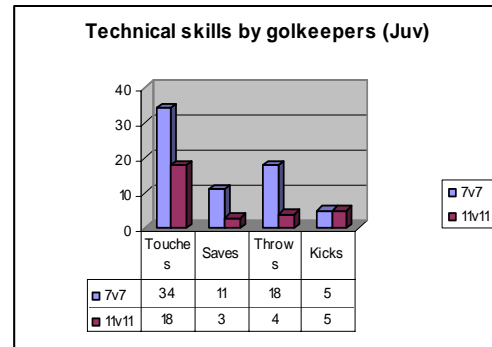
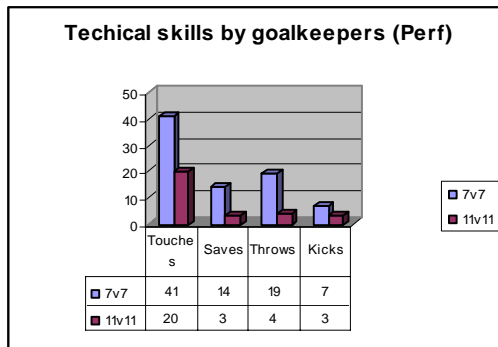


Again, consistency is demonstrated in the results where it can be observed that more first time passes were attempted in the small-sided game format than the full-sized game. Although it is interesting to note that there is very little difference in the percentage-success rate in the performance club format and indeed, in the juvenile study there was a greater percentage-success rate in the 11v11 game. This could be due to the fact that they have more space and time to move the ball in the full size game format.



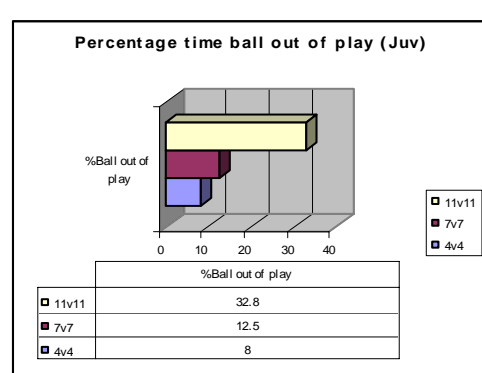
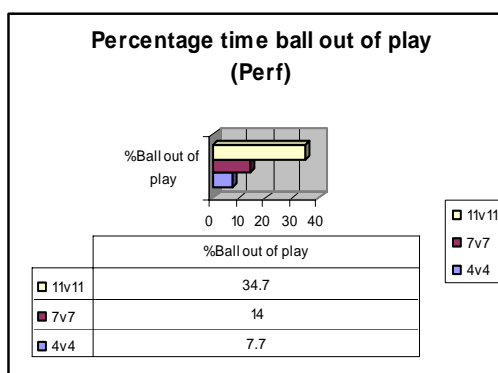
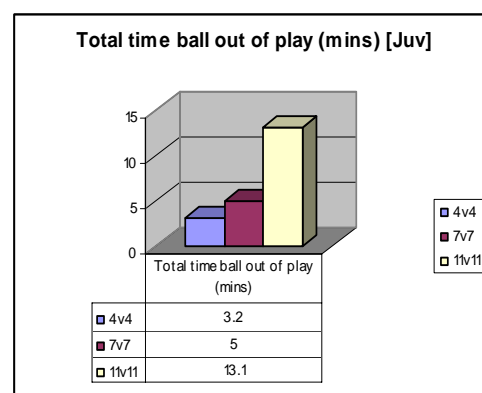
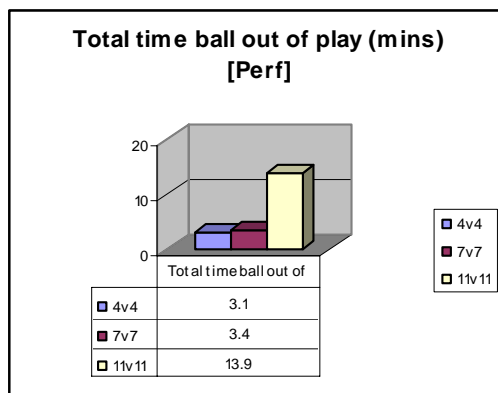
Analysis of the above graph related directly to the number of touches taken by each player whilst in possession. Comparison of the results show players of both performance and juvenile levels increase their number of touches during the small-sided games.

5.4 TECHNICAL SKILLS BY GOALKEEPERS



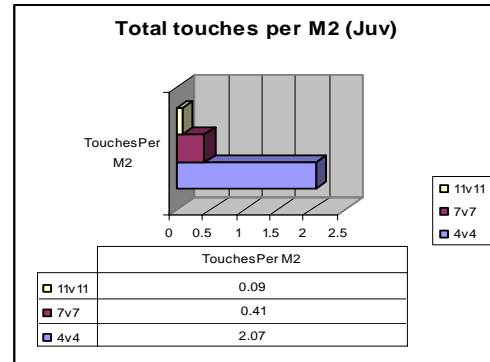
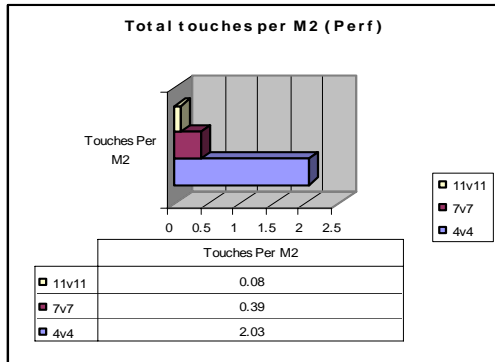
As above, it is clear to see that goalkeepers receive more touches, make more saves and general actions in the 7v7 format than they do in the 11v11 games. Technical skills performed by goalkeepers tend to be between two and four times more often in the small-sided game, allowing for better technical development. Note that in this study there were no goalkeepers in the 4v4 games.

5.5 PLAY AND POSSESSION



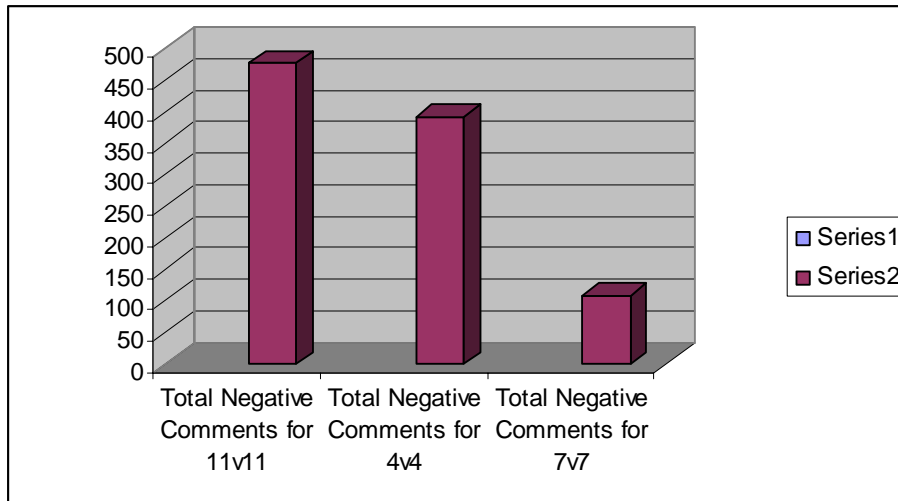
The results show very clearly that the ball is out of play far more often in the 11v11 game than the small-sided game formats. In both cases, the 11v11 games demonstrated that the ball was out of play for 13 minutes plus in both studies, which accounts for around 32-34 % of the overall time of play. In the small-sided games the ball was out of play far less, 7-8% in the 4v4 format and 12-14% in the

7v7 formats. Therefore, in terms of the relationship between the ball being out of play and the number of touches and indeed, most technical skills performed by players, this would certainly be limited through the 11v11 games due to the fact that the ball is in play far less.



The studies show that in both the performance and the juvenile formats the players make much more use of the playing area in the small-sided games. When the total touches per square metre were recorded it was apparent that players did not utilise the pitch as much in the full-sized game and the number of touches per square metre is much, much less. The space was utilised more in the 7v7 games but it is conclusive that in the 4v4 games players utilise all areas of the pitch.

6. Participants Feedback on Small Sided Games Study



A total of 62 structured questionnaires were completed by parents, players and coaches.

To summarise the results the greatest proportion of negative comments were attributed to the 11v11 format, a total number of 477 negative responses were collected about the 11v11 format compared with 392 for the 4v4 format and 109 for the 7v7 format. Although the children found all formats enjoyable, 90% of the children taking part thought the 4v4 game helped to improve technical aspects of the game more than the 11-a-side game. Only 48% of children thought the 11v11 game helped improve their dribbling skills, whereas over 85% felt the 7v7 provided more opportunities to improve their dribbling skills.

One further significant finding was only 11% of the players believed they touched the ball more during the 11 v11 game compared to the other formats. Over 80% of players believed they touched the ball more in the small-sided games than the 11 v 11 games. This suggests that one or two dominant players maybe benefiting from the 11-a-side game.

To summarise 90% of the players believed the 4v4 format was the best environment to develop as a player.

6.1 Sample Questionnaire

Small Sided Games Study Part I – 4v4 – 7v7 Analysis

POSITIVE AND NEGATIVE COMMENT CATEGORIES for 4v4 against 7v7: 1= Agree with Statement. 2 = Disagree with statement							
POSITIVE COMMENTS ABOUT THE 4 v 4 Study	A	B	C	NEGATIVE COMMENTS ABOUT THE 4 v 4 Study	A	B	C
The game was enjoyable/more enjoyable than 7 v 7				The 4 v 4 games are less competitive than 7 v 7			
The Pilot Scheme was well organised				Supervision of players was lacking or more difficult			
The Scheme was well organised				The 4 v 4 games did not improve positional awareness			
Players get more chance to express themselves				The parents didn't understand it			
4 v 4 games are challenging/more challenging than 7 v 7				The 4 v 4 games are less competitive than 7 v 7			
There is less emphasis on winning than 7 v 7				The 4 v 4 games are less exciting to watch than 7 v 7			
The 4 v 4 improves techniques more				Its difficult to compare the teams competing			
4v4 is a good learning environment				The Scheme is to expensive to run			
Players take more responsibility for their own actions				Unique facilities are needed to run The Scheme			
The 4v4 game builds player confidence				The 4 v 4 games were too one dimensional			
The 4v4 game is/was worthwhile				The game was nothing new			
The 4v4 game improves decision making				The 4 v 4 games did not improve defensive awareness			
The 4v4 game improves dribbling skills				The 4 v 4 games did not improve crossing			
There is less pressure (generally) in The game				The 4 v 4 games did not improve off the ball running			
There is less pressure from coaches in The game				The 4 v 4 games did not improve heading			
The game improves overall development				The Scheme benefits the SFA primarily			
The lack of positions aids player development				In 4 v 4 the errors go uncorrected			
The game improves short passing				In 4 v 4 the stronger boys dominate			
In the game there is less pressure from parents				The Pilot Scheme is too similar to training			
The game improves tactical awareness				During The Pilot Scheme player's interest waned			
During the game you can assess players better				Players don't learn how to cope with winning or losing			
The 4 v 4 games increases number of touches				The 4 v 4 games are more tiring			
Line ball game was best				The 4 v 4 games need goals and nets			
The Goalkeepers game was best							
The 4 v 4 games improve reaction time/more than 7v 7				Subtotal Number of Negative Comments			
The 4 v 4 improves 1 v 1/more than 7 v 7							
The 4 v 4 improves scoring opportunities / more than 7 v 7							
The 4 v 4 improves switching of play / more than 7 v 7				TOTAL NUMBER OF NEGATIVE COMMENTS			
The 4 v 4 improves creation of space/more than 7 v 7				KEY A Children taking part B Parents of Children taking part C Coaches and other Observers of the study			
4 v 4 improves transition from offence to defence							
The 4 v 4 is as competitive / more competitive as 7 v 7							
The two gaol game is/was best							
Subtotal Number of Positive Comments							
TOTAL NUMBER OF POSITIVE COMMENTS							

Small Sided Games Study Part II – 4v4 – 7v7 Analysis

POSITIVE AND NEGATIVE COMMENT CATEGORIES: 1= Agree with Statement. 2 = Disagree with statement							
POSITIVE COMMENTS ABOUT THE 7 v 7 Study	A	B	C	NEGATIVE COMMENTS ABOUT THE 7 v 7 Study	A	B	C
The game was enjoyable/more enjoyable than 11 v 11				The 7 v 7 games are less competitive than 11 v 11			
The Pilot Scheme was well organised				Supervision of players was lacking or more difficult			
The Scheme was well organised				The 7 v 7 games did not improve positional awareness			
Players get more chance to express themselves				The parents didn't understand it			
7 v 7 games are challenging/more challenging than 11 v 11				The 7 v 7 games are less competitive than 11 v 11			
There is less emphasis on winning than 11 v 11				The 7 v 7 games are less exciting to watch than 11 v 11			
The 7 v 7 improves techniques more				Its difficult to compare the teams competing			
7v7 is a good learning environment				The Scheme is to expensive to run			
Players take more responsibility for their own actions				Unique facilities are needed to run The Scheme			
The 7v7 game builds player confidence				The 7 v 7 games were too one dimensional			
The 7v7 game is/was worthwhile				The game was nothing new			
The 7v7 game improves decision making				The 7 v 7 games did not improve defensive awareness			
The 7v7 game improves dribbling skills				The 7 v 7 games did not improve crossing			
There is less pressure (generally) in The game				The 7 v 7 games did not improve off the ball running			
There is less pressure from coaches in The game				The 7 v 7 games did not improve heading			
The game improves overall development				The Scheme benefits the SFA primarily			
The lack of positions aids player development				In 7 v 7 the errors go uncorrected			
The game improves short passing				In 7 v 7 the stronger boys dominate			
In the game there is less pressure from parents				The Pilot Scheme is too similar to training			
The game improves tactical awareness				During The Pilot Scheme player's interest waned			
During the game you can assess players better				Players don't learn how to cope with winning or losing			
The 7 v 7 games increases number of touches				The 7 v 7 games are more tiring			
The 7 v 7 games improve reaction time/more than 11v 11				The 7 v 7 games need goals and nets			
The 7 v 7 improves 1 v 1/more than 11 v 11							
The 7 v 7 improves scoring opportunities / more than 11 v 11							
The 7 v 7 improves switching of play / more than 11 v 11							
The 7 v 7 improves creation of space/more than 11 v 11							
7 v 7 improves transition from offence to defence							
				TOTAL NUMBER OF NEGATIVE COMMENTS			
The 7 v 7 is as competitive / more competitive as 11 v 11				KEY A Children taking part B Parents of Children taking part C Coaches and other Observers of the study			
Subtotal Number of Positive Comments							
TOTAL NUMBER OF POSITIVE COMMENTS							

Small Sided Games Study Part III – 11v11 – Small sided

POSITIVE AND NEGATIVE COMMENT CATEGORIES: 1= Agree with Statement. 2 = Disagree with statement							
POSITIVE COMMENTS ABOUT THE 11 v 11 Study	A	B	C	NEGATIVE COMMENTS ABOUT THE 11 v 11 Study	A	B	C
The game was enjoyable/more enjoyable than 4v4/7v7				The 11v11 games are less competitive than 7v7/4v4			
The Pilot Scheme was well organised				Supervision of players was lacking or more difficult			
The Scheme was well organised				The 11v11 games did not improve positional awareness			
Players get more chance to express themselves				The parents didn't understand it			
11 v 11 games are challenging/more challenging than 4v4/7v7				The 11v11 games are less competitive than 11 v 11			
There is less emphasis on winning than 4v4/7v7				The 11v11 games are less exciting to watch than 4v4/7v7			
The 11v11 improves techniques more				Its difficult to compare the teams competing			
11v11 is a good learning environment				The Scheme is to expensive to run			
Players take more responsibility for their own actions				Unique facilities are needed to run The Scheme			
The 11v11 game builds player confidence				The 11 v 11 games were too one dimensional			
The 11v11 game is/was worthwhile				The game was nothing new			
The 11v11 game improves decision making				The 11 v 11 games did not improve defensive awareness			
The 11v11 game improves dribbling skills				The 11 v 11 games did not improve crossing			
There is less pressure (generally) in The game				The 11 v 11 games did not improve off the ball running			
There is less pressure from coaches in The game				The 11 v 11 games did not improve heading			
The game improves overall development				The Scheme benefits the SFA primarily			
The lack of positions aids player development				In 11 v 11 the errors go uncorrected			
The game improves short passing				In 11 v 11 the stronger boys dominate			
In the game there is less pressure from parents				The Pilot Scheme is too similar to training			
The game improves tactical awareness				During The Pilot Scheme player's interest waned			
During the game you can assess players better				Players don't learn how to cope with winning or losing			
The 11 v 11 games increases number of touches				The 11 v 11 games are more tiring			
The 11 v 11 games improve reaction time/more than 7v7/4v4				The 11 v 11 games need goals and nets			
The 11 v 11 improves 1 v 1/more than 7v7/4v4							
The 11 v 11 improves scoring opportunities / more than 7v7							
The 11v11 improves switching of play / more than 7v7/4v4				Subtotal Number of Negative Comments			
The 11 v11 improves creation of space/more than 7v7/4v4							
11v11 improves transition from offence to defence				TOTAL NUMBER OF NEGATIVE COMMENTS			
The 11v 11 is as competitive / more competitive as 7v7/4v4				KEY A Children taking part B Parents of Children taking part C Coaches and other Observers of the study			
Subtotal Number of Positive Comments							
TOTAL NUMBER OF POSITIVE COMMENTS							

6.2 Analysis of Completed Small Sided Games Questionnaire

Analysis Of Completed Small Sided Games Questionnaires.

Total Questionnaires Completed	62
Players	41
Parents	17
Coaches	4

Total Negative Comments for 11v11	477
Total Negative Comments for 4v4	392
Total Negative Comments for 7v7	109

Study Questions

No. of Agreeable Responses % of Agreeable Responses

4v4

The game was enjoyable	59	95.16%
The study was well organised	59	95.16%
Players had the chance to express themselves	55	88.71%
4v4 games are challenging	42	67.74%
There is less emphasis on winning	40	64.52%
4v4 improves techniques	55	88.71%
4v4 is a good learning environment	56	90.32%
The 4v4 is worthwhile	50	80.65%
4v4 Game improves decision making	44	70.97%
The lack of positions aids player development	32	51.61%
The 4v4 game is as competitive as 7v7 and 11 v11	32	51.61%
There was less pressure from the coaches during 4v4 games	45	72.58%
The game improves short passing	61	98.39%
In the 4v4 game there was less pressure from parents.	54	87.10%

No. of Agreeable Responses % of Agreeable Responses

11 v 11 Compared to Small Sided Games (7v7, 4v4)

The game was enjoyable	60	96.77%
The study was well organised	61	98.39%
There is more emphasis on winning in the 11v11 game	41	66.13%
Players had the chance to express themselves	50	80.65%
The 11v11 games improves techniques more	30	48.39%
The 11v11 game improves dribbling skills	30	48.39%
11v11 games are challenging	44	70.97%
11v11 Game improves decision making	53	85.48%
The 11v11 game is as competitive as 7v7 and 4v4	55	88.71%
The game improves short passing	14	22.58%
In the 11v11 game there was more pressure from parents.	25	40.32%
The 11v11 game increases scoring opportunities	15	24.19%
The 11v11 game increases the number of touches per player	11	17.74%
The 11v11 game increases the amount of 1v1 play	14	22.58%

7 v 7 Compared to 11v11

The game was enjoyable	60	96.77%
The study was well organised	61	98.39%
The game improves overall development	56	90.32%
There is more emphasis on winning in the 11v11 game	41	66.13%
Players had the chance to express themselves	50	80.65%
The 7v7 game improves dribbling skills	45	72.58%
7v7 games are challenging	44	70.97%
7v7 Game improves decision making	53	85.48%
The 7v7 game is as competitive as 11v11	55	88.71%
The game improves switching of play	47	75.81%
In the 7v7 game there was more pressure from parents.	14	22.58%
The 7v7 game increases scoring opportunities	44	70.97%
The 7v7 game increases the number of touches per player	49	79.03%
The 7v7 game increases the amount of 1v1 play	46	74.19%

7. The Model of Long Term Player Development (LTPD)

When evaluating the usefulness of player development in football through the use of the small-sided game, it is imperative that as coaches and educators we consider the 'Long Term Player Development' pathway. All activities must be appropriate for the age and stage of players where failure to take this into account could seriously affect the development of players further into their teens and adulthood. The following information has been adopted from research by world leading researcher, Istvan Balyi in his paper *Trainability in Children* (2003).

According to Balyi (2003) crucial to the development of children into competent players is the incarnation of the "Long-term Player Development Model". According to the research a specific and well-planned practice, training, competition and recovery regime will ensure optimum development throughout a player's career. Ultimately, sustained success comes from training and performing well over **the long-term rather than winning in the short-term**. There is no short cut to success in football preparation and overemphasising competition in the early phases of training will always cause shortcomings in players abilities later in their career.

Late specialisation sports, including football and all team sports require a generalised approach to early training. For these sports, the emphasis during the first two phases of training should be on the development of general motor and technical-tactical skills. This is especially relevant when we consider the overriding aims of small-sided games as a tool for developing appropriate activities and age specific football activities for children.

Scientific research has concluded that it takes eight-to-twelve years of training for a talented player to reach elite levels. This is called the ten-year or 10,000 hour rule, which translates to slightly more than three hours of practice daily for ten years (Ericsson, et al., 1993; Ericsson and Charness, 1994, Bloom, 1985; Salmela et al., 1998) Unfortunately, a significant number of parents and coaches in football still approach training with an attitude best characterised as peaking by the weekend where a short-term approach is taken to training and performance with an overemphasis on immediate results. We now know that a long-term commitment to practice and training is required to produce better players at all levels of participation, not just in football but in all sports. Coaches should gauge success in terms of player progress and not by the results of matches. Balyi outlined the stages of development as follows:

- √ FUNDamental stage
- √ Learning to Train
- √ Training to Train
- √ Training to Compete
- √ Training to Win
- √ Retirement / retainment

This part of the paper will focus on the Fundamentals and Learning to Train stages which are relevant specifically to this research and specific age groups. However it should be noted that the other stages of the LTPD are extremely important and themselves require a great deal more consideration in relation to how football in Scotland is structured in the future.

The objective of the Fundamental stage (Males 6 - 9 / Females 6 - 8 years) is to learn all fundamental movement skills (build overall motor skills) Fundamental movement skills should be practiced and mastered before sport-specific skills are introduced. The development of these skills, using a positive and fun approach, will contribute significantly to future sporting achievements. Participation in a wide range of activities is also encouraged. This emphasis on motor development will produce players who have a better trainability for long-term, football-specific development. Fundamental movement skills are observable as locomotor, manipulative and stability skills. There are three stages of fundamental movement skill development: initial (2-3 years), elementary (4–5 years) and mature (6–7years).

The “FUNdamental” phase should be well structured and fun. The emphasis is on the overall development of the player’s physical capacities and fundamental movement skills, and the ABC’s of athleticism - Agility, Balance, Coordination and Speed. Participation in as many activities as possible is encouraged. Speed, power and endurance are developed using FUN games. Appropriate and correct running, jumping and throwing techniques are taught using the ABC’s of activities.

The Learning to Train stage (Males 9 – 12 / Females 8 – 11 years) is especially relevant within this study of the small-sided game. Focusing on the development of children between 9 and 12 years of age, the key objective is to learn all fundamental football skills (build overall football skills). Specialised movement skills are developed from age seven to age eleven, and are specialised sports/football skills. By passing the fundamental and specialised skill development phase is likely to be detrimental to the child’s future engagement in football and sport. Early specialisation into the eleven a side game can also be detrimental to the proceeding stages of skill development.

One of the most important periods of motor development for children is between the ages of nine to twelve. During this time children are developmentally ready to acquire general overall sports skills that are the cornerstones of all sporting development. Following on from the findings within this study, it can be concluded that this is best achieved through the development of small-sided games where children will receive repeated touches of the ball, repeated decision making experience, repeated experience of basic tactical situations, more individual responsibility – every player must attack and defend, the game is easier to understand and players will develop a freedom of expression – no positions in early stages.

This is the ‘window of accelerated adaptation to motor coordination’. All fundamental movement skills should be further developed and general overall sports skills will be learned during this phase. If fundamental motor skill training is not developed between the ages of eight to eleven and nine to twelve respectively

for females and males, a significant window of opportunity has been lost, compromising the ability of the young player to reach his/her full potential. The present environment in Scotland would not allow the few players through playing the full-sized game where examples exist from the age of eight upwards to master this stage of their development and will have a serious impact on the future development/ability of players at a later stage of youth development.

The “Training to Train” phase addresses two of the critical or sensitive periods of physical development. Players who miss this phase of training will not reach their full potential, as these critical periods have been missed. The “Learn to Train” and “Training to Train” stages are the most important phases of player preparation. Therefore the emphasis on the small-sided game should be paramount to the development of players and certainly, must be continued to be emphasised through the Scottish Coach Education system. In particular, the use of the 4v4 game whether as a training or match tool should be considered imperative to youth football in Scotland.

8. Evidence Value of Small-Sided Games

As well as the focus of this study being through observational analysis, it is important to understand that other methods exist for determining the worth of small-sided games for children. This can be achieved through;

- Mathematical formula
- Physiological data
- Biological stages of growth
- Cognitive stages of growth
- Social/Emotional stages of growth

The move to small-sided games for children/youth players is based on educational research on the way children learn. Just as with their academic education their football education is progressive. Empirical studies have been conducted into the improvement in the game environment for children in small-sided games as opposed to the adult version of the game. Mathematically, levels (or lines) of interaction are the possible passing connections between players. Each time another player enters the field of play the level of complexity of the game environment increases. The interactions are tactical possibilities. This obviously has an impact depending on the age and stage of the player. Pre-teen children find it difficult to understand complex patterns of play and the more players that are added to a game, the more difficult the learning experience becomes. Ultimately, this could stifle the child’s ability to develop their technical and tactical abilities. According to Snow (2005), the number of possible passing interactions increases significantly depending on the number of players added to a game/training situation. The levels of interaction can be viewed below:

Possible Passing Interactions by Number of Players			
2-players	2	10-players	90
3-players	6	11-players	110
4-players	12	12-players	132
5-players	20	13-players	156
6-players	30	14-players	182
7-players	42	16-players	240
8-players	56	18-players	306
9-players	72	20-players	380
		22-players	462

Therefore it can be easily seen that the increase in passing interactions between the 4v4, 7v7 and 11v11 games increases from 12 to 42 to 110 respectively. In terms of the number of players in a team [and opposition], will determine the complexity of the decision making process and will have a direct correlation to success rate. It would seem feasible that using small-sided games would be more appropriate to the age and stage of children and youth players.

There is also evidence, from exercise physiology studies, of improved physical fitness due to the small sided games environment (for adults as well as children). This study involved the support from the Scottish Institute of Sport who assessed the physiological impacts of the 4v4, 7v7 and 11v11 games on the players. This was conducted using Global Positioning System (GPS) technology linked to heart rate monitors. It is important to point out at this stage that findings again supported the argument for small-sided games being more appropriate to the development of young footballers.

8.1 Gp Sports Analysis System

Gp Sports analysis is a software package providing football coaches, fitness trainers and players, the potential to develop a comprehensive database of game related performance data, using the GP Sports SPi10.

Specific physical aspects of the players were measured, such as distances covered, speed of movement, heart rate and positional information. Results showed that involvement in small-sided games either as part of a match programme or within a training context, players are more likely to produce quality movement patterns at higher intensity levels, thus providing more physiological benefit as part of the long term player development process.

9.1 Summary

The results from the study clearly demonstrate that the small-sided games (SSG) principle is based on sound educational and developmental evidence. Children learn in a progressive and sequential way using a building block approach through a combination of technical and tactical skill development as well as physiological and psychological development of the young players involved.

In terms of the key differences of the small-sided game over the eleven-a-side game and the benefits of the 4v4 and 7v7 formats, this observational research study has demonstrated:

- Far more repeated touches of the ball by all players
- More touches throughout all areas of the pitch
- More passes attempted are in a forward direction in the Small Sided Game. In the 11-a-side game, the majority of passes are in a backward direction
- More attacking 1 v1s, final third and penalty area entries
- More shots on goal and technical skills by goalkeepers
- Repeated decision making experience
- The ball is in play far more in the Small Sided Game
- Repeated experience of basic tactical situations
- More active participation is directly related to fun and enjoyment
- More experience in all phases of the game. There is no hiding or dominant player hogging the ball. Every child has to participate in all facets of the game, attack and defend. The emphasis is on PLAYER DEVELOPMENT.
- More active participation leads to an optimal fitness load
- Better success rate leads to better quality of play and player retention
- Better success rate leads to better self esteem and self confidence
- More individual responsibility – every player must attack and defend
- The game is easier to understand
- Freedom of expression – no positions in early stages
- Less perceived stress on the player when playing the small-sided game
- Less negative comments on the small-sided game
- 80% of children believe that they touched the ball more often in the small-sided game
- There was less perceived pressure from parents in the small-sided game
- It is apparent that children enjoyed all the game formats

Research shows that the ability of children to make decisions in a difficult, ever changing environment will be dictated very much by their developmental age, their preparation and the complexity of the situation (Vygotsky 1996). Clearly within this study, the children who participated had a better opportunity to develop in line with the Long Term Player Development model, where more touches, more attacking play and decision making experience amongst others will lead to increased development of their technical skills through appropriate activities based on age and stage of their development.

The small-sided game allows coaches the best opportunity to observe and analyse the individual and group responses of players under quick game-like conditions. If fundamental motor skill training is not developed between the ages of eight to eleven and nine to twelve respectively for females and males, the opportunity has

been lost, compromising the ability of the young player to reach his/her full potential. Researchers are agreed that the small-sided game is advantageous to coaches in a number of ways:

- √ There is less space required to play
- √ A chance for more individual coaching
- √ A better standard of play as the children will be more successful performing in the small sided format
- √ The coach can have more children playing (at least 42 or more on one pitch)
- √ The coach is following the accepted developmental pathway for children and can be confident that he/she is given their players the best chance at success
- √ Players are more likely to stay in the game if they feel successful, therefore the coach will have less player retention issues
- √ Less pressure on the coach to win when playing trophy free development football

The study is very much the starting point for future discussions about the development of youth players in Scotland and a great deal work must be done by all those involved in the game. However, it is very clear that the research agrees with all previous work and concludes that the use of the 4 and 7-a-side games are the best means of teaching the technical and tactical [decision making] parts of the game in preparation for the adult game. The researchers would therefore like to make the following recommendations:

9.2 Recommendations

- The evidence from the research clearly demonstrates the benefits of children playing small-sided games at U12 age group as opposed to the full eleven-a-side equivalent.
- In agreement with a number of researchers and the Long Term Player Development Pathway, the 11 v 11 game is a game designed by adults for adults and should be seen as the last part of the learning journey. The 4 v 4 game is the first step in the ladder and the 7 v 7 game is the intermediate step.
- The use of the 4 and 7-a-side games are the best means of teaching the technical and tactical [decision making] parts of the game in preparation for the adult game.
- The physiological benefits of participating in small-sided games are a valuable physiological training tool for all players, also allowing the improvement of technical, tactical and psychological skill development at the same time.

- However, if benefits are as clear as research indicates, the question begs as to what age children/youths should continue to participate in small-sided games, eg. U15?
- Next stage of research must look at different age groups and effectiveness of small-sided games, whilst ensuring a longitudinal approach to the development of youth level football in Scotland.

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