



A  
SUPPLEMENTARY  
STUDY

# Number of Players and ideal Pitch Sizes in Children's and Youth Football

Undertaken by the Danish Football Association and its regions



– fra leg til landshold

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# Introduction



## Introduction

This research is based on a total of 100 children's and youth matches, which were recorded, analysed, and reviewed. In total, around 600 U8 to U14 players participated in the study (including both boys and girls). Individual observations of 310 players were also carried out in the spring of 2013.

In the first section of the study on the number of players and pitch size study, we learned a great deal about pitch sizes. It became clear that small pitches encourage more player related actions even though the ball is more often out of play, and that larger pitches result in less player related actions, but greater rates of success. These findings has enabled us to be able to make a series of empirical suggestions as to how large an ideal pitch should be (e.g. for a 3v3 or 5v5 game). It is also clear that there are differences in relation to age and ability level when sizing an ideal pitch. However with a few adjustments, we have managed to develop a series of practical pitch sizes for all matches.

It was decided that the committee behind the Number of players study should also be involved in the supplementary studies. The committee behind the initial autumn 2012 study of the Number of players consisted solely of representatives from the Danish grassroots football community, as well as staff from the DBU grassroots department and DBU's regions. To ensure the best possible representation, it was decided that the committee should be expanded to include two representatives with a background in elite football. Hence, the final committee behind the study was organised as follows:

### Danish FA grassroots department:

Morten Nielsen, Project Leader Children's football. Anders Rørtoft-Madsen, Project Leader Youth football.

### Danish FA regions:

David Kiær Nielsen, DBU Jutland. Michael Juul, DBU Zealand. Brian Molberg, DBU Copenhagen. Mogens Jør-gensen, DBU Fynen.

### Danish FA national teams department:

Steen Gleie, Talent Coordinator/Boys.

### Danish FA - group of national coaches:

Peter Bonde, 1st. Assistant Coach/ DBU's A-National Team.

The qualitative analysis of different game types was a vital factor for the initial studies with respect to experimenting with other game types and pitch sizes in the second part of the study. As an example: Based on background knowledge, we noted that although there were many ball possession per player in the 9v9 game (mainly passes and receiving the ball), most passes occurred across the field - a type of passes which cannot be considered as particularly challenging for the players. Thus, based on this knowledge, and an awareness that 7v7 games are often played on a half-sized full pitch, we decided to test an 8v8 game on a half-sized full pitch (52.5 x 68m).

In this supplementary report U8 boys, U10 boys, U11 boys and girls, and U13 boys and girls were filmed and analysed. In relation to the final recommendations of this report, we have chosen to operate with individual age groups that we categorise as 'the challenging age groups'. This specifically relates to the U10 and U13 age groups, where there are differences in the number of players allowed across the country. This results in quite a few discussions about the number of players allowed and the pitch sizes. Hence this report has a more intensified focus on these age groups, thereby providing as much information as possible, and allowing us to develop concrete recommendations for the preferred number of players allowed on the pitch.



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# Method



## Metode

The conclusion from the first report of Autumn 2012 has formed the basis for what this supplementary study aims to clarify. As highlighted in the introduction, we learned a lot about pitch sizes in the first report, so this time around we have not tested the same game types on differently sized pitches, as we feel confident that we have already covered this in previous studies. This second part of the study on number of players allowed and pitch size focuses more on comparing the ideal pitch size in one game type against the ideal pitch size of another game type. In doing so, we aim to ensure that we achieve accurate recommendations for the correct game type and pitch size for

each individual age group, thereby ensuring the greatest amount of involvement per player, and the best development possible for players.

The selection of age group, game type, and pitch size chosen for this study are based on the results of the first study. In the first study, we confirmed that 3v3 was the most challenging game type for the youngest players. The following table shows which age groups, game types, and pitch sizes are included in this supplementary study:

Year Group	Level	Number of Players per Team
U-8 Boys	A	5v5
U-8 Boys	C	5v5
U-11 Boys	A	8v8
U-11 Boys	B	8v8
U-13 Girls	B	7v7+8v8

U-11 Girls	B	7v7+8v8
U-10 Boys	A	5v5+8v8
U-10 Boys	C	5v5+8v8

U-13 Boys	A	8v8+11v11
U-13 Boys	C	8v8+11v11



One challenge we encountered was that the recommended ideal 5v5 pitch size (24 x 30m) for the most talented U10 players was too small. Hence we have examined a larger 5v5 field of 30 x 40m for U10 Boys at A and C levels. We have used the same pitch size for the age group U8 at A and C level to ensure that it is the correct pitch size for U8, U9, and U10. U10 Boys were also tested on an 8v8 – 52.5m x 68m pitch for comparison with the 5v5 30 x 40m pitch.

The premise for this study has been to test whether 8v8 is the correct game type for age groups between U11 and U13. Hence we investigated U13 Boys 8v8 and compared with 11v11 on a normal pitch size. U11 were also tested on an 8v8 52.5m x 68m field.

The second part of the study supplements the results we gained from the first part of the study, and arrives at a combined recommendation of what game types should be offered to players in Danish children's and youth football.

Another aim of this study was to simplify the recommendations for game types and pitch sizes, to ensure optimal player development as well as provide greater clarity for all parties including clubs, coaches, parents, and players.

There are almost unlimited options for what one can choose to investigate in a study. Hence it was critical to provide some limitations in order to remain focused on achieving the study's main goal, as well as focussing on the study's target audience; in this case grassroots players.

We have therefore deliberately avoided testing the impacts of having offside in 8v8 games (among other things). The committee believes that this would put too great a focus on the individual player's position on the pitch in a given tactical situation at too young an age, thereby going beyond the Player Development Philosophy of the Danish FA. This philosophy defines individual player

development, as well as the recommendations outlined in the Danish FA's Age Related Training Manuals. The same applies for which goal size fits best with an 8v8 game. Here, the committee concluded that 7v7 goals would fit best to this pitch size, as well as the players' technical and physical skill levels. The 2012 study highlighted that larger goal sizes do not necessarily mean that more goals are scored. In general, focusing on specific rules was deliberately avoided. This was done in order to ensure the clearest results for which game type and pitch sizes can involve and develop the individual player as much as possible.

All matches were conducted on artificial grass. The committee are well aware that there are differences when playing football on artificial grass and normal grass, however this does not have a large impact on the game involvement of individual players.

To ensure the best possible results for the study, the total number of matches and players were carefully selected in collaboration with the Centre for Team Sports and Health at the University of Copenhagen. In doing so, we can be confident that our results have an adequate and valid base, and are statistically significant. The Centre for Team Sports and Health also measured pulse rates and conducted GPS tracking on specific age groups. The results of these measurements are not included in this report, but are expected to form a part of the dissemination of study results.

The processing of match data was undertaken by Amisco Scandinavia, who ordinarily provides match analyses for several clubs in the Danish Super League. Amisco have observed all the individual actions of each player in the matches, and we are very confident that the statistics give an accurate picture of the differences between the various game types and pitch sizes.



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# Quantitative Results





## Quantitative Results

### Results

This section contains both the qualitative and quantitative results – We have chosen to present some of the key figures and then highlighted those that are most significant. A total overview of all data can be seen in Appendix 1 and 2, where the complete results of the quantitative analysis are presented.

### Quantitative Results

As mentioned earlier, matches were analysed by Amisco. Amisco provided not only an overview which was used in the first part of this study, but also individual player statistics of all relevant players in the selected age groups. In the following section we will present the most significant results from the quantitative analysis

### U8 Boys

As expected, the results show a very high degree of involvement (player action) in the game on a correctly sized pitch. At both A and C levels the average was around 46 actions per player per match of 20 minutes duration, which is very impressive.

### U10 Boys A level

There is no doubt that many more actions per player occur in a 5v5 game compared to an 8v8. The overview below provides a good insight of the number of touches per player in the two different game types (the data only includes players who participated in both game types).

U10 A	5v5					8v8					Difference		
No.Players	Minutes	Actions	Per Min.	Success	Success %	Minutes	Actions	Per Min.	Success	Success %	Actions	Per Min.	Success Act.
30 P. (30)	20	45	2,25	25	55,56	19	17	0,89	10	58,82	28	1,36	15
2 P. (02)	20	56	2,8	44	78,57	19	12	0,63	10	83,33	44	2,17	34
8 P. (08)	20	84	4,2	68	80,95	19	47	2,47	38	80,85	37	1,73	30
9 P. (09)	20	62	3,1	44	70,97	19	23	1,21	17	73,91	39	1,89	27
1 P. (01)	20	42	2,1	29	69,05	19	13	0,68	8	61,54	29	1,42	21
Average		57,80	2,89	42,00			22,40	1,18	16,60		35,40	1,71	25,40
1 P. (01)	20	70	3,5	58	82,86	24	26	1,08	14	53,85	44	2,42	44
3 P. (03)	20	62	3,1	40	64,52	24	36	1,50	25	69,44	26	1,60	15
7 P. (07)	20	46	2,3	31	67,39	24	49	2,04	32	65,31	-3	0,26	-1
2 P. (02)	20	52	2,6	38	73,08	24	15	0,63	10	66,67	37	1,98	28
Average		57,50	2,88	41,75			31,50	1,31	20,25		26,00	1,56	21,50
1 P. (01)	20	45	2,25	42	93,33	19	19	1,00	17	89,47	26	1,25	25
2 P. (02)	20	79	3,95	68	86,08	19	50	2,63	47	94,00	29	1,32	21
3 P. (03)	20	53	2,65	39	73,58	19	37	1,95	29	78,38	16	0,70	10
6 P. (06)	20	94	4,7	73	77,66	19	58	3,05	50	86,21	36	1,65	23
7 P. (07)	20	88	4,4	68	77,27	19	64	3,37	48	75,00	24	1,03	20
Average		71,80	3,59	58,00			45,60	2,40	38,20		26,20	1,19	19,80
1 P. (01)	20	59	2,95	55	93,22	24	7	0,29	7	100,00	52	2,66	48
10 P. (10)	20	93	4,65	72	77,42	24	40	1,67	32	80,00	53	2,98	40
12 P. (12)	20	103	5,15	83	80,58	24	51	2,13	43	84,31	52	3,03	40
2 P. (02)	20	99	4,95	87	87,88	24	74	3,08	60	81,08	25	1,87	27
Average		88,50	4,43	74,25			43,00	1,79	35,50		45,50	2,63	38,75

The table shows that all players (18) with the exception of one had more frequent possession of the ball in the 5v5 game than the 8v8 game, as well as greater numbers of successful actions. And all players (without exception) had more actions per minute in the 5v5 than the 8v8. The numbers are so apparent that they speak for themselves.



### U10 Boys C-level

The same pattern is evident for the C-level players as it were for the A-level players. A similar table can be seen below:

U10 C	5v5					8v8					Difference		
No.Players	Minutes	Actions	Per Min.	Success	Success %	Minutes	Actions	Per Min.	Success	Success %	Actions	Per Min.	Success Act.
12 P. (12)	21	6	0,29	5	83,33	24	72	3,00	56	77,78	-66	-2,71	-51
8 P. (08)	21	93	4,43	71	76,34	24	38	1,58	28	73,68	55	2,85	43
2 P. (02)	21	118	5,62	90	76,27	24	19	0,79	11	57,89	99	4,83	79
11 P. (11)	21	73	3,48	43	58,90	24	57	2,38	44	77,19	16	1,10	-1
1 P. (01)	21	33	1,57	22	66,67	24	33	1,38	20	60,61	0	0,20	2
Average		64,60	3,08	46,20			43,80	1,83	31,80		20,80	1,25	14,40
1 P. (01)	21	34	1,62	21	61,76	24	74	3,08	54	72,97	-40	-1,46	-33
2 P. (02)	21	76	3,62	57	75,00	24	45	1,88	36	80,00	31	1,74	21
6 P. (06)	21	59	2,81	43	72,88	24	25	1,04	17	68,00	34	1,77	26
7 P. (07)	21	65	3,10	43	66,15	24	26	1,08	16	61,54	39	2,01	27
10 P. (10)	21	87	4,14	57	65,52	24	26	1,08	11	42,31	61	3,06	46
Average		64,20	3,06	44,20			39,20	1,63	26,80		25,00	1,42	17,40
1 P. (01)	20	53	2,65	42	79,25	20	31	1,55	23	74,19	22	1,10	19
4 P. (04)	20	80	4,00	65	81,25	20	15	0,75	10	66,67	65	3,25	55
12 P. (12)	20	78	3,90	65	83,33	20	17	0,85	12	70,59	61	3,05	53
5 P. (05)	20	47	2,35	34	72,34	20	76	3,80	65	85,53	-29	-1,45	-31
Average		64,50	3,23	51,50			34,75	1,74	27,50		29,75	1,49	24,00
1 P. (01)	20	37	1,85	22	59,46	20	57	2,85	46	80,70	-20	-1,00	-24
4 P. (04)	20	38	1,90	28	73,68	20	34	1,70	25	73,53	4	0,20	3
12 P. (12)	20	71	3,55	58	81,69	20	9	0,45	5	55,56	62	3,10	53
Average		48,67	2,43	36,00			33,33	1,67	25,33		15,33	0,77	10,67

In this table, five players out of 17 had fewer actions in the 5v5 than the 8v8, with one player having even numbers of actions in both games. However, from an overall perspective, there is no doubt that players were more involved and had more successful actions in the 5v5 than the 8v8.

One explanation for the large discrepancies in the C-level figures may be that some of the players took turns to be goal keeper in the two game types, and thus why some players results stand out compared to other players. This does not change the overall picture however, and clearly shows that: The greatest levels of player involvement occur in a 5v5 game!



### U13 Boys A-level

The results indicate a less significant difference between the two tested game types, 8v8 and 11v11 at the U13 Boys A-level in comparison with the results for the U10 players but the difference is however still noticeable. The percent-

ages are also very much in line with what we've seen in earlier studies. The reason behind the minor difference is mostly due to the fact that there were fewer actions per player in general:

U13 A	8v8					11v11					Difference		
	No.Players	Minutes	Actions	Per Min.	Success	Success %	Minutes	Actions	Per Min.	Success	Success %	Actions	Per Min.
1 P. (01)	22	31	1,41	25	80.65	21	6	0,29	4	66.67	25	1,12	21
6 P. (06)	22	45	2,05	40	88.89	21	27	1,29	21	77.78	18	0,76	19
3 P. (03)	22	33	1,50	27	81.82	21	23	1,10	21	91.30	10	0,40	6
7 P. (07)	22	16	0,73	8	50.00	21	17	0,81	13	76.47	-1	-0,08	-5
8 P. (08)	22	32	1,45	25	78.13	21	45	2,14	31	68.89	-13	-0,69	-6
10 P. (10)	22	59	2,68	49	83.05	21	13	0,62	9	69.23	46	2,06	40
9 P. (09)	22	32	1,45	27	84.38	21	22	1,05	15	68.18	10	0,41	12
Average		35,43	1,61	28,71			21,86	1,04	16,29		13,57	0,57	12,43
3 P. (03)	22	41	1,86	40	97.56	21	24	1,14	17	70.83	17	0,72	23
5 P. (05)	22	31	1,41	26	83.87	21	24	1,14	16	66.67	7	0,27	10
6 P. (06)	22	45	2,05	37	82.22	21	30	1,43	25	83.33	15	0,62	12
10 P. (10)	22	30	1,36	21	70.00	21	18	0,86	13	72.22	12	0,51	8
11 P. (11)	22	14	0,64	10	71.43	21	29	1,38	19	65.52	-15	-0,74	-9
9 P. (09)	22	34	1,55	23	67.65	21	17	0,81	11	64.71	17	0,74	12
7 P. (07)	22	37	1,68	32	86.49	21	3	0,14	1	33.33	34	1,54	31
Average		33,14	1,51	27,00			20,71	0,99	14,57		12,43	0,52	12,43
1 P. (01)	20	15	0,75	14	93.33	20	20	1,00	16	80.00	-5	-0,25	-2
5 P. (05)	20	52	2,60	39	75.00	20	37	1,85	32	86.49	15	0,75	7
6 P. (06)	20	71	3,55	63	88.73	20	66	3,30	54	81.82	5	0,25	9
2 P. (02)	20	50	2,50	36	72.00	20	32	1,60	25	78.13	18	0,90	11
12 P. (12)	20	38	1,90	27	71.05	20	20	1,00	15	75.00	18	0,90	12
3 P. (03)	20	35	1,75	31	88.57	20	29	1,45	24	82.76	6	0,30	7
8 P. (08)	20	23	1,15	17	73.91	20	24	1,20	16	66.67	-1	-0,05	1
11 P. (11)	20	24	1,20	19	79.17	20	18	0,90	12	66.67	6	0,30	7
Average		38,50	1,93	30,75			30,75	1,54	24,25		7,75	0,39	6,50
1 P. (01)	20	13	0,65	13	100.00	20	13	0,65	12	92.31	0	0,00	1
3 P. (03)	20	53	2,65	42	79.25	20	52	2,60	44	84.62	1	0,05	-2
7 P. (07)	20	42	2,10	37	88.10	20	50	2,50	47	94.00	-8	-0,40	-10
8 P. (08)	20	47	2,35	37	78.72	20	23	1,15	16	69.57	24	1,20	21
4 P. (04)	20	37	1,85	27	72.97	20	48	2,40	42	87.50	-11	-0,55	-15
9 P. (09)	20	41	2,05	36	87.80	20	43	2,15	41	95.35	-2	-0,10	-5
6 P. (06)	20	62	3,10	51	82.26	20	42	2,10	32	76.19	20	1,00	19
10 P. (10)	20	27	1,35	24	88.89	20	44	2,20	35	79.55	-17	-0,85	-11
Average		40,25	2,01	33,38			39,38	1,97	33,63		0,88	0,04	-0,25



### U13 Boys C-level

The statistical results show that the same tendencies apply as for the U13 boys from the A-level:

U13 C	8v8					11v11					Difference		
	No.Players	Minutes	Actions	Per Min.	Success	Success %	Minutes	Actions	Per Min.	Success	Success %	Actions	Per Min.
3 P. (03)	21	55	2,62	50	90.91	24	35	1,46	26	74.29	20	1,16	24
4 P. (04)	21	48	2,29	37	77.08	24	20	0,83	12	60.00	28	1,45	25
7 P. (07)	21	27	1,29	19	70.37	24	37	1,54	29	78.38	-10	-0,26	-10
6 P. (06)	21	34	1,62	23	67.65	24	15	0,63	9	60.00	19	0,99	14
8 P. (08)	21	52	2,48	39	75.00	24	9	0,38	6	66.67	43	2,10	33
9 P. (09)	21	54	2,57	39	72.22	24	20	0,83	18	90.00	34	1,74	21
10 P. (10)	21	30	1,43	25	83.33	24	27	1,13	22	81.48	3	0,30	3
<b>Average</b>		<b>42,86</b>	<b>2,04</b>	<b>33,14</b>			<b>23,29</b>	<b>0,97</b>	<b>17,43</b>		<b>19,57</b>	<b>1,07</b>	<b>15,71</b>
12 P. (12)	21	13	0,62	5	38.46	24	14	0,58	10	71.43	-1	0,04	-5
6 P. (06)	21	32	1,52	23	71.88	24	49	2,04	41	83.67	-17	-0,52	-18
3 P. (03)	21	74	3,52	61	82.43	24	21	0,88	14	66.67	53	2,65	47
8 P. (08)	21	16	0,76	5	31.25	24	8	0,33	6	75.00	8	0,43	-1
5 P. (05)	21	16	0,76	12	75.00	24	16	0,67	9	56.25	0	0,10	3
7 P. (07)	21	48	2,29	38	79.17	24	23	0,96	17	73.91	25	1,33	21
10 P. (10)	21	20	0,95	16	80.00	24	12	0,50	9	75.00	8	0,45	7
9 P. (09)	21	58	2,76	43	74.14	24	58	2,42	46	79.31	0	0,35	-3
<b>Average</b>		<b>34,63</b>	<b>1,65</b>	<b>25,38</b>			<b>25,13</b>	<b>1,05</b>	<b>19,00</b>		<b>9,50</b>	<b>0,60</b>	<b>6,38</b>
13 P. (01)	21	24	1,14	15	62.50	21	15	0,71	6	40.00	9	0,43	9
7 P. (05)	21	16	0,76	9	56.25	21	16	0,76	8	50.00	0	0,00	1
12 P. (06)	21	46	2,19	37	80.43	21	28	1,33	20	71.43	18	0,86	17
6 P. (02)	21	11	0,52	7	63.64	21	17	0,81	13	76.47	-6	-0,29	-6
10 P. (12)	21	43	2,05	23	53.49	21	34	1,62	22	64.71	9	0,43	1
11 P. (03)	21	24	1,14	16	66.67	21	17	0,81	13	76.47	7	0,33	3
1 P. (08)	21	26	1,24	18	69.23	21	17	0,81	14	82.35	9	0,43	4
<b>Average</b>		<b>27,14</b>	<b>1,29</b>	<b>17,86</b>			<b>20,57</b>	<b>0,98</b>	<b>13,71</b>		<b>6,57</b>	<b>0,31</b>	<b>4,14</b>
1 P. (01)	21	28	1,33	22	78.57	21	14	0,67	10	71.43	14	0,67	12
3 P. (03)	21	53	2,52	41	77.36	21	27	1,29	21	77.78	26	1,24	20
6 P. (06)	21	43	2,05	34	79.07	21	35	1,67	28	80.00	8	0,38	6
8 P. (08)	21	33	1,57	29	87.88	21	51	2,43	46	90.20	-18	-0,86	-17
4 P. (04)	21	35	1,67	26	74.29	21	22	1,05	14	63.64	13	0,62	12
7 P. (07)	21	50	2,38	41	82.00	21	51	2,43	35	68.63	-1	-0,05	6
9 P. (09)	21	32	1,52	23	71.88	21	34	1,62	22	64.71	-2	-0,10	1
10 P. (10)	21	22	1,05	11	50.00	21	12	0,57	8	66.67	10	0,48	3
<b>Average</b>		<b>37,00</b>	<b>1,76</b>	<b>28,38</b>			<b>30,75</b>	<b>1,46</b>	<b>23,00</b>		<b>6,25</b>	<b>0,30</b>	<b>5,38</b>

There is no doubt that the 8v8 ensures a greater degree of player involvement than the 11v11 for the U13 age group in general.

#### What about the girls?

In relation to total number of actions or effective playing time, neither study shows any statistical indication that

there should be a difference between girls and boys. Obviously there are some differences between girls and boys football, but this is discussed more in the qualitative analyses. Quantitatively speaking, there are no differences.



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## Qualitative Results



## Qualitative Results

### Results

As mentioned in the introduction, we have worked with the so-called 'challenging age groups'. With this in mind, we decided to begin the qualitative analysis by looking at these age groups first. Regardless of the quantitative analysis outcomes, the idea was to assess whether the different game types make developmental sense for the players. In other words: Do the players experience player actions which are performed under pressure, but which simultaneously have the potential to be successful actions? There is little point in performing many successful actions if the majority are executed without pressure. There is also no point in performing under pressure all the time, such that no successful actions are achieved. This idea is based on the Player Development Philosophy of the Danish FA, where one of the most important elements for a player is to be able to manage 1v1 situations under pressure. This idea has been central for the qualitative analysis. As a starting point, the committee, and in particular Peter Bonde from the group of national coaches, have analysed videos of matches with different game types from the two challenging age groups (as well as making comparisons with the 8v8 for U11). This included both A and C levels.

### U10 Boys A-level

The 5v5 game on a 30 x 40m pitch functioned very well. Many successful actions were evident where the players had to perform under pressure, but also where the field's size ensured that there was always enough space to react and successfully play the ball away from the pressure.

The 8v8 game on a 52.5 x 68m pitch worked quite well. There were quite a few successful actions; however the field was so large that as soon as a player manoeuvred the ball away from pressure, a long time passed before they encountered another situation under pressure. In other words, there was a lot of running after (or with) the ball until another opponent (or player) was encountered. It was also noted that the larger playing field naturally lead to more focus on team/tactical organisation, which resulted in the outcome that more players were less involved in the game.

A part-conclusion here is that the 5v5 for U10 Boys A level is by far the best game type.

To be sure, we also closely analysed the U11 Boys A level 8v8, where the quality/standard of play was dramatically higher. The players are bigger and faster, which means that they are able to put their opponent under pressure more rapidly than the U10 players. Similarly, their technical abilities, as well as their capacity to read the play and exploit available space in the game, are also better. 8v8 is a very good game type for U11, and it therefore makes sense that the changeover between smaller and larger game types occurs at this age group.

### U10 Boys C-level

Overall, the same conclusions from the A level can be drawn for the C level. Prior to analysis, one could imagine that the less skilled players would benefit from having more space, and on this basis, expect that the 8v8 game type would perhaps be best here. However, to a large extent, there were very few players that appeared to be involved when there were eight players per team. In the 5v5 game type one might assume that there would be too little time, in relation to the technical ability level, but the good thing with the C players is that they do not put pressure as hard or as fast. On some occasions players even gave their opponents time to control the ball before trying to tackle them and win the ball. The experience of the C level also therefore shows, that 5v5 is by far the best game type, where players have successes under (moderate) pressure, and where all are involved in the game.

### U13 Boys A-Level

The 8v8 game type on an a half 11-man pitch (52.5m x 68m) was an even greater and intense game. The players' technical abilities and game understanding were constantly challenged under substantial amounts of pressure. There are an immense number of patterns and elements which can also be seen in a regular 11v11 game. The players were challenged at all times and the structure of the game invited many 1v1 situations. Furthermore, successfully beating a player in a 1v1 situation often resulted in a shot at goal. The players were often successful when performing difficult actions under pressure, which resulted in many shots on goal.

The 11v11 game type also works well for these players, as they actually have the technical and tactical strength to play a



full size game. The game itself takes place in a small space with lots of pressure on the ball carrier, and thus functions extremely well. The differences with the 8v8 game type are that when a player is successful at escaping opponent pressure, the result is nearly always a (long) deep ball, which produces a competitive sprint over 30-40m to win the ball. If and only if, the attacker wins the sprint, they get a chance for a shot at goal. The results show however, that there were few shots at goal after a long sprint with pressure, and most of these shots were from the edge of the penalty area.

A part conclusion here is that even though these players are strong enough to play on a full-sized pitch, they get a lot more out of playing an 8v8 game. This game type contains all the same elements of the game – both technical and tactical, however it does not have the same amount of 'running' in order to create a goal scoring opportunity or to prevent a goal from being scored.

In comparison with the U14 Boys A level, there was a clear difference. The U14 Boys have a physical capacity which allows them a much greater ability to play on a full-sized pitch. They were better and quicker at putting pressure on the ball carrier, and covered the field better so it was less likely that a direct sprint between two players would result in a shot at goal. Although untested, we assumed that the increased physical capacity of this group means the 8v8 pitch is too small for them.

#### **U13 Boys C-level**

The 8v8 game type provided good challenges for the players in this level. There was a constant, moderate amount of pressure on the ball carrier, yet the ball carrier still had space to be successful in their actions.

The 11v11 game made absolutely no sense for the players in this age group and level. It was often a matter of kicking the ball back and forth until it slipped past a defender and then pursued by both teams. There were many occurrences of a player running with or after the ball and completely free of pressure. There were also many examples of a single player

running with the ball for more than  $\frac{3}{4}$  of the field's length without encountering opposition, and ending with the attacker missing the 1-on-1 chance against the goal keeper.

#### **Other age groups and levels**

The analysis of video material from the other age groups and levels broadly confirms the conclusions of the first study, particularly regarding pitch sizing. Our analysis confirms the correct pitch sizes that can provide players with enough space for successful actions, whilst still ensuring enough pressure, instead of running for long stretches with or without the ball, without being challenged by an opponent.

#### **Boys vs. Girls – should they changeover to a new game type at the same age?**

From a qualitative perspective, there is a great difference between the levels of girls and boys, when comparing U11 B level for example. The boys are technically and tactically more skilled than the girls, but this is due to many factors. These factors are irrelevant however for the purpose of our study. As mentioned earlier, there are large differences between A and C levels in the U10 group, where there could be some concern regarding a lack of space on the smaller field. The case for the U10 C Boys also applied to the U11 B Girls. When compared to U11 B Boys, the girls ran slower when under pressure, or when putting pressure on an opponent. As a result, the direct analysis shows that it makes no sense to differentiate between genders when assessing the correct age to changeover from one game type to the next. Children obviously develop at different rates, both physically and mentally, so of course there will be differences in development between boys and girls. Nevertheless, there is nothing in the study that indicates there should be a differentiation between genders in relation to the changeover between game types.



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# Conclusion





## Conclusion

Based on the results of our qualitative and quantitative analysis, we have concluded that we now have a great deal of knowledge about age groups and ability levels with respect to which game types and pitch sizes are best for developing the most talented and contented Danish football players.

Our first concrete recommendation which should form part of 'Attitudes and Actions' in the future, is that there should be a minimum of 5 balls available per game, so that effective

playing time per game can be increased. Parents, siblings etc can help out with this by being 'ball boys'.

The results presented have been thoroughly discussed and interpreted, such that a unanimous committee has proposed the following model to be used in future Danish FA and regional tournaments:

Year Group	Game Type	Field Size
U5, U6, and U7	3v3	13x21m
U8, U9, and U10	5v5	30x40m
U11, U12, and U13	8v8	52.5x68m
U14 and over	11v11	68x105m

The recommendation above means that we will be able to reduce the number of pitch sizes and game types (before we had 5)

And at the same time, without compromising the results of this study, will be able to help many clubs' to reduce their practical and logistical challenges on a daily basis.

We also recommend that a smaller number of players are used for 'beginner groups' within each age-group (e.g. offering a 3v3 game for U8 beginners etc.).

The structure of development through game types ensures that not only talented elite players, but also the other 98% of players benefit as much as possible. This is not simply something we are guessing, but something we now know a lot about...

### A final word

The Danish FA and the committee behind the study would sincerely like to thank all those that were involved in the process and who have made the completion of this report possible. Thank you to all the clubs and their players who agreed to participate in the remaining 35 football matches in the spring of 2013, which have formed the background for the final observations.

Thank you to all the internal staff of the Danish FA and the regions that have contributed and ensured the completion of the project.

### Appendices

Appendix 1: Overview of Quantitative Analyses

### Webtheme

[dbu.dk/spilleformer](http://dbu.dk/spilleformer)

# Bilag 1: Samlet oversigt over kvantitative analyser.

Kamp	Række	Niveau	Spilleform	Banestørrelse	Kamptid	Effektiv spilletid	Effektiv spilletid %	Boldbesiddelser pr. spiller hold 1	Boldbesiddelser pr. spiller hold 2	Boldbesiddelser pr. spiller i alt	Berøringer pr. boldbesiddelse hold 1	Berøringer pr. boldbesiddelse hold 2	Berøringer pr. boldbesiddelse i alt	Aktioner pr. spiller i alt	Aktioner pr. min. eff. tid pr. Spiller****	Mål hold 1	Mål hold 2	Mål i alt	Efter indlæg	Efter langskud	Efter lang afl.	Efter opspil	Efter dribling	Øvrige	Antal afslutninger	Efter indlæg	Langskud	Efter lang afl.	Efter opspil	Efter dribling	Antal indlæg	Succes%	Afleveringer hold 1	% hold 1	Afleveringer hold 2	% hold 2	Antal afleveringer i alt	Succes%	Antal driblinger	Succes%	Antal interceptions	Antal modtagninger hold 1	Succes% hold 1	Antal modtagninger hold 2	Antal modtagninger hold 2	Modtagelser i alt	Succes%
1	U-8 Dreng	A	5v5	30*40	00.20.18	00.11.36	57%	19,60	31,39	25,498	1,65	1,87	1,76	44,88	3,87	1	4	5	1	2	1	0	1	1	24	2	6	6	1	3	12	25%	40	40%	77	64%	117	56%	5	60%	56	47	72,34%	83	81,93%	130	78,46%
2	U-8 Dreng	A	5v5	30*40	00.21.22	00.12.13	57%	23,61	22,40	23,001	1,94	2	1,97	45,31	3,71	1	3	4	0	1	1	0	2	0	22	0	5	4	1	3	16	0,00%	56	39%	40	58%	96	47%	11	64%	67	62	88,71%	61	85,25%	123	86,99%
3	U-8 Dreng	A	5v5	30*40	00.19.19	00.12.16	64%	25,61	19,80	22,704	2,13	2,08	2,105	47,79	3,90	3	3	6	0	0	0	0	2	0	25	0	7	4	1	3	10	20,00%	54	67%	41	54%	95	61%	11	82%	50	65	92,31%	52	80,77%	117	87,18%
4	U-8 Dreng	C	5v5	30*40	00.20.06	00.11.08	55%	21,80	22,59	22,198	2,4	1,91	2,155	47,84	4,30	3	3	6	1	1	4	0	2	31	1	5	11	2	7	11	36,36%	43	51%	34	62%	77	56%	23	74%	48	70	85,71%	66	78,79%	136	82,35%	
5	U-8 Dreng	C	5v5	30*40	00.20.19	00.12.42	63%	19,01	21,41	20,207	2,33	2,16	2,245	45,36	3,57	3	2	5	0	0	1	0	2	20	0	5	6	2	4	2	0,00%	45	73%	55	53%	100	62%	12	50%	43	57	85,96%	58	87,93%	115	86,95%	
6	U-8 Dreng	C	5v5	30*40	00.22.10	00.13.26	61%	21,80	24,00	22,902	2	2,33	2,165	49,58	3,69	4	1	5	0	0	2	0	1	26	1	5	7	1	3	17	29,41%	33	70%	44	57%	77	63%	16	69%	45	61	71,05%	61	86,89%	122	78,97%	
7	U-10 Dreng	A	5v5	30*40	00.22.10	00.14.20	70%	24,79	29,59	27,192	1,97	2,25	2,11	57,38	4,00	1	7	8	0	1	1	1	1	25	1	7	6	2	5	7	42,86%	73	63%	84	71%	157	67%	18	67%	51	69	89,86%	101	91,09%	170	90,59%	
8	U-10 Dreng	A	5v5	30*40	00.20.42	00.13.46	67%	23,61	28,40	26,004	2,06	2,85	2,455	63,84	4,64	0	1	1	0	0	0	1	1	18	0	6	5	3	6	0	0,00%	72	72%	85	73%	157	73%	21	52%	42	53	83,02%	102	86,02%	155	84,99%	
9	U-10 Dreng	A	5v5	30*40	00.20.08	00.11.59	60%	20,39	30,01	25,201	2,06	2,47	2,265	57,08	4,76	0	9	9	0	1	2	4	4	34	3	9	7	6	7	9	44,44%	46	78%	90	83%	136	81%	13	69%	31	43	83,72%	93	93,55%	136	90,44%	
10	U-10 Dreng	A	8v8	52,5*68	00.19.58	00.13.07	66%	12,50	18,49	15,49625	2,14	2,34	2,24	34,71	2,65	6	3	9	0	0	2	1	2	24	4	2	5	5	3	16	25,00%	56	77%	95	83%	151	81%	17	65%	39	56	94,64%	98	91,84%	154	92,86%	
11	U-10 Dreng	A	8v8	52,5*68	00.24.58	00.18.05	72%	14,75	20,50	17,6275	1,65	2,59	2,12	37,37	2,07	0	7	7	0	1	0	0	0	19	0	3	1	1	3	3	33,33%	51	61%	109	77%	160	72%	4	25%	48	47	76,60%	128	92,97%	175	88,57%	
12	U-10 Dreng	C	5v5	30*40	00.21.34	00.14.01	65%	24,60	24,79	24,695	2,34	2,17	2,255	55,69	3,97	4	3	7	0	3	1	0	2	28	0	16	4	0	3	9	0,00%	56	55%	57	67%	113	61%	18	44%	49	72	83,33%	76	80,26%	148	81,75%	
13	U-10 Dreng	C	5v5	30*40	00.20.43	00.13.00	63%	24,60	20,39	22,495	2,32	2,76	2,54	57,14	4,40	2	0	2	0	1	1	0	2	29	3	9	9	9	5	14	28,57%	62	63%	52	63%	114	63%	13	69%	52	60	91,67%	56	94,64%	116	93,10%	
14	U-10 Dreng	C	5v5	30*40	00.20.01	00.11.20	57%	25,61	17,80	21,703	2,44	2,03	2,235	48,51	4,28	6	1	7	0	0	1	2	4	23	0	4	4	3	5	11	9,09%	60	73%	28	68%	88	71%	11	82%	36	85	82,35%	51	76,47%	136	80,15%	
15	U-10 Dreng	C	8v8	52,5*68	00.20.04	00.13.27	67%	15,62	14,37	14,994375	2,65	2,36	2,505	37,56	2,79	2	3	5	0	2	0	1	1	23	2	5	6	6	7	28,57%	66	70%	59	58%	125	64%	19	58%	52	83	90,36%	67	92,54%	150	91,33%		
16	U-10 Dreng	C	8v8	52,5*68	00.20.07	00.12.33	62%	12,62	12,75	12,684375	2,59	2,77	2,68	33,99	2,71	0	7	7	1	0	1	2	2	28	3	3	4	5	7	11	18,18%	54	65%	52	67%	106	66%	28	50%	44	64	93,75%	70	85,71%	134	89,55%	
17	U-11 Piger	B	7v7	40*56	00.21.24	00.15.30	72%	22,42	18,57	20,49928571	2,56	1,67	2,115	43,36	2,80	4	0	4	1	1	0	1	4	15	1	6	3	5	9	3	33,33%	100	56%	70	46%	170	52%	15	73%	87	106	85,85%	71	73,24%	177	80,79%	
18	U-11 Piger	B	7v7	40*56	00.20.00	00.11.13	56%	19,42	14,14	16,78285714	2,04	1,51	1,775	29,79	2,66	10	2	12	2	0	3	1	0	27	3	8	5	4	1	9	66,67%	70	79%	41	51%	111	69%	4	25%	40	85	83,53%	46	65,22%	131	77,10%	
19	U-11 Piger	B	7v7	40*56	00.11.52	00.07.30	63%	11,00	10,58	10,78785714	2,08	1,74	1,91	20,60	2,75	0	0	0	0	0	0	0	0	8	0	5	1	0	2	3	0,00%	60	48%	66	52%	126	50%	11	82%	42	41	90,24%	38	76,32%	79	83,54%	
20	U-11 Piger	B	8v8	52,5*68	00.20.10	00.13.19	66%	14,12	18,12	16,121875	1,56	2,38	1,97	31,76	2,38	0	5	5	0	0	0	2	0	24	1	2	3	3	3	10	30,00%	73	40%	92	67%	165	55%	8	100%	81	45	84,44%	97	91,75%	142	89,43%	
21	U-11 Piger	B	8v8	52,5*68	00.20.03	00.14.56	74%	23,38	11,25	17,31125	1,97	2,07	2,02	34,97	2,34	5	0	5	0	0	0	1	0	31	0	1	2	5	4	4	50,00%	115	73%	28	32%	143	65%	10	60%	51	109	88,99%	46	65,22%	155	81,94%	
22	U-11 Dreng	A	8v8	52,5*68	00.20.22	00.15.28	76%	24,38	11,25	17,813125	2,24	1,88	2,06	36,70	2,37	6	0	6	2	0	3	2	2	17	7	3	4	6	9	14	78,57%	138	87%	56	77%	194	84%	26	77%	33	127	96,06%	51	90,20%	178	94,38%	
23	U-11 Dreng	A	8v8	52,5*68	00.29.29	00.21.22	72%	27,25	26,62	26,93625	2,22	2,16	2,19	58,99	2,76	7	0	7	0	1	1	0	2	19	1	3	2	0	4	50,00%	152	84%	137	75%	289	80%	11	55%	64	139	89,21%	139	84,89%	278	87,05%		
24	U-11 Dreng	B	8v8	52,5*68	00.20.53	00.15.53	76%	17,26	18,25	17,75125	2,49	2,22	2,355	41,80	2,63	0	2	2	0	0	2	0	0	19	1	8	3	1	4	10	20,00%	86	66%	92	68%	178	67%	19	63%	66	87	86,21%	82	91,46%	169	88,76%	
25	U-11 Dreng	B	8v8	52,5*68	00.21.06	00.16.13	77%	22,50	16,13	19,311875	2,37	2,11	2,24	43,26	2,67	4	0	4	0	0	1	0	1	27	2	5	4	1	3	13	30,77%	111	77%	57	67%	168	74%	11	55%	51	110	89,09%	69	79,71%	179	85,47%	
26	U-13 Piger	B	8v8	52,5*68	00.19.55	00.12.56	65%	18,12	12,99	15,558125	2,43	1,73	2,08	32,36	2,50	4	0	4	1	0	1	2	4	14	1	5	3	4	7	3	33,33%	95	67%	55	53%	150	62%	18	100%	62	98	90,82%	57	80,70%	155	87,10%	
27	U-13 Piger	B	8v8	52,5*68	00.20.44	00.13.09	63%	19,25	11,25	15,24875	2,05	1,63	1,84	28,06	2,13	5	1	6	3	0	2	3	0	18	5	3	3	5	8	9	44,44%	97	69%	39	41%	136	61%	13	77%	59	95	90,53%	37	89,19%	132	90,15%	
28	U-13 Dreng	A	8v8	52,5*68	00.21.09	00.12.05	57%	13,13	15,50	14,31375	2,43	2,1	2,265	32,42	2,68	1	3	4	0	3	0	1	0	17	2	4	4	0	3	12	25,00%	58	79%	80	83%	138	81%	18	83%	34	58	87,93%	70	92,86%	128	90,63%	
29	U-13 Dreng	A	11v11	68*105	00.20.04	00.15.43	78%	12,09	14,55	13,32	2,37	2,44	2,405	32,03	2,04	0	1	1	0	0	0	1	1	3	0	0	1	0	1	7	28,57%	99	68%	122	77%	221	73%	12	58%	62	84	91,67%	104	97,12%	188	94,68%	
30	U-13 Dreng	A	11v11	68*105	00.21.23	00.12.38	59%	10,00	9,36	9,68	2,02	2,2	2,11	20,42	1,62	0	0	0	0	0	0	0	0	12	0	3	2	2	0	4	50,00%	68	69%	66	67%	134	68%	6	33%	40	64	92,19%	66	89,39%	130	90,77%	
31	U-13 Dreng	A	8v8	52,5*68	00.20.36	00.13.52	67%	17,50	17,00	17,249375	2,04	2,28	2,16	37,26	2,69	0	3	3	1	0	2	1	1	11	1	3	4	1	1	11	36,36%	101	79%	92	77%	193	78%	11	45%	47	83	92,77%	83	89,16%	166	90,97%	
32	U-13 Dreng	C	8v8	52,5*68	00.21.45	00.12.01	55%	16,01	13																																						