

Sports Halls: Sizes and Layouts



Introduction

This Guidance Note recommends minimum dimensions for the design of multi-sports halls. As well as being the UK's most popular indoor sport badminton has the most demanding requirements for a number of functional elements including lighting and associated roof structure, background colours and air velocities. For these reasons the overall dimensions of the five halls shown are derived from the optimum arrangement of badminton courts compatible with the minimum spatial requirements of other indoor sports.

The space required for most games depends on the standard of play; generally the higher the standard the larger the space. The playing area is usually the same size but increased safety margins and clear height may be required. For most competition play an extra zone is required for team benches and an officials' table and a further security zone between teams and spectators may be required for major events. Adding these margins around the playing area produces the critical overall space – the minimum safe area for each standard of play.

In specialist halls individual requirements, particularly for sports that need a larger pitch such as handball, hockey and korfbal, may overrule the modular method in favour of the key sport's critical dimensions. Other factors which may militate against the modular method include:

- dedicated extra space – for example a sprint chute for indoor athletics
- additional spectator seating
- where a large hall serves as a regional sports arena
- to adjust to structural and key building component sizes
- non-sports events that require increased space
- where a multi-sports hall is designed for county or national standard play in one or more sports.

Which sports – how many courts?

Guidance on selecting a hall size to accommodate a range of sports at different levels of play is shown in the table. It covers the sports that require line markings and confirms the number of courts and pitches for each size of hall. The table omits sports that need less space for which all the sizes noted have ample capacity and sufficient clear height. The abbreviations used denote:

- R recreational
- P practice
- C club
- LD lower divisions, local league
- TD top divisions, local league
- Cy county
- Rg regional
- N national/international

A few three-court halls have been built, but with an area only 20% less than four-court halls and because of the restrictions imposed on most team games they are not considered to represent value for money. However, three-court (27 x 18 x 7.6m), two-court (17 x 18 x 6.1–7.6m), and one-court (10 x 18 x 6.1m) sports halls are covered in the Guidance Note *Village and Community Halls*.



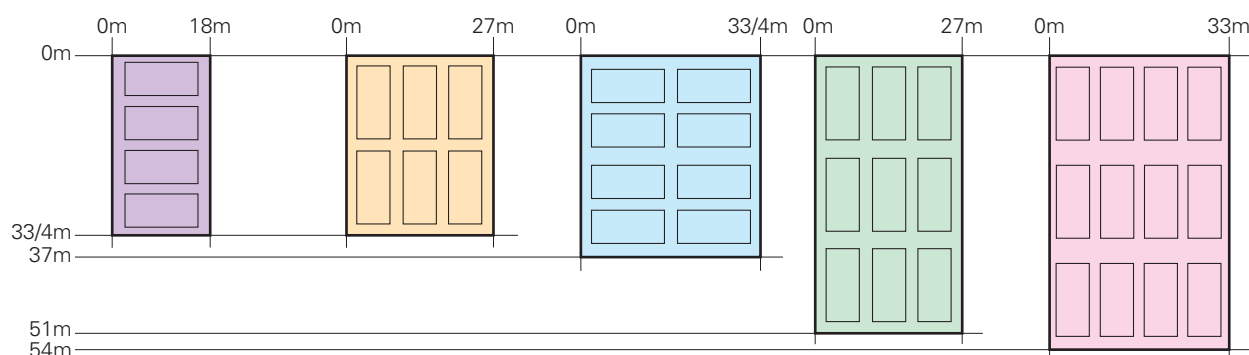
Sports hall structure, lights and division netting must be aligned between badminton courts.

	Four-court hall 33 x 18 x 7.6m 594m ²	Six-court hall 33/4 x 27 x 7.6m 918m ²	Eight-court hall 37 x 33/4 x 7.6/9.1m 1221m ²	Nine-court hall 51 x 27 x 7.6/9.1m 1377m ²	Twelve-court hall 54 x 33 x 9.1m high 1782m ²										
Sport	Standard of play			Standard of play			Standard of play			Standard of play			Standard of play		
	C R	Cy	N	C R	Cy	N	C R	Cy	N	C R	Cy	N	C R	Cy	N
Badminton and short tennis	4	–	–	6	3	3	8	3/6*	3/6*	9	6	6	12	6/9*	6
				9.1m ht			9.1m ht								
Basketball	C(LD) 1	–	–	C(TD) 1	C(TD) 1	1	C(LD) 2	C(TD) 1	1	C(LD) 1/2P	C(TD) 1/3P	1	C(LD) 3	C(TD) 1/2*	1/2*
				2P	2P		–	2P							
Gymnastics	P	–	–	P	–	–	1	P	–	2P	1	1	3P	1	1
Five-a-side football	1	P	–	2	1	–	2	1	–	3	1	P	3	3	1
Handball	1 Mini	–	–	1	–	–	2	1	–	2	1	1	3	1	1
							9m ht			9m ht 9m ht					
Indoor hockey	1 Unihoc	–	–	1	–	–	2	P	–	2	1	1	3	1	1
Korfball	P	–	–	P	–	–	1	–	–	1	1	1	3P	1	1
									2P	9m ht 9m ht					
Netball	P	–	–	P	–	–	2P	1	–	1/2P	1	1	2P	1/2*	1/2*
Volleyball	1	1	–	2	1/2P	–	2	2	1/2	4	2/3*	1/3	4	2/4*	2/3
							10.5m ht			10.5m ht			10.5m ht		
Sports hall athletics	P	P	–	P	1	–	2P	1	1	1	1	1	2P	1	1

Notes

* Maximum number of courts, without spectator seating, for preliminary rounds

P Below space standard for competition play recommended by the governing body, but suitable for practice and training


Modular incremental sports hall dimensions.

Four-court hall

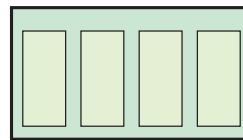
The critical minimum dimensions for this most popular size of sports hall are 33 x 18 x 7.6m. Main structure must always be aligned between the badminton courts to create four bays. Extra width can be considered to enable cricket nets to be hung alongside rather than over the badminton courts and to provide an extended spectator zone. An extra 1.5m added to the length and 0.25m to the width allows for a full-size netball court with side and end margins.

Notes

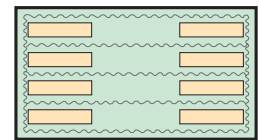
- A minimum height of 7.6m must be provided over the whole badminton court area and 7m minimum for most team games including basketball and volleyball.
- The 33 x 18m dimensions allow four doubles play badminton courts with a central division net.
- County standard badminton requires a length of 34.8m and a height of 9.1m.
- The 18m width is ideal for several of the smaller space sports. A full-length fencing piste, short mat bowls carpet and up to four table tennis tables can be accommodated across the width of the hall.
- Badminton courts can be central in the hall or offset to provide a narrow circulation zone to the entrance side of the hall.
- Bagged cricket and hall division netting can be stowed outside the critical play areas for most sports but for five-a-side football which utilises the whole space nets must be hoisted above shoulder height.
- Basketball benefits from an increase in width to 19m to allow full side margins or, alternatively, the minimum margins plus officials' space.

The diagram on page 5 shows the full markings typically used in a four-court hall with key setting out dimensions. Recommended line colour is shown on a background that denotes a

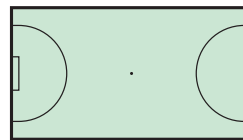
beechwood floor. Preferred positions for door openings and viewing panels are included around the perimeter. The netball play area is shown reduced to allow full safety margins. Smaller scale diagrams for individual sports are shown later in the Guidance Note. They provide background on the possibilities and restrictions inherent in planning multi-purpose spaces but do not show all line markings. **Consult governing body handbooks for this level of detail.**



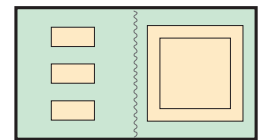
Badminton



Cricket nets



Team games



Trampoline/judo

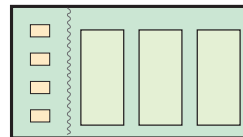
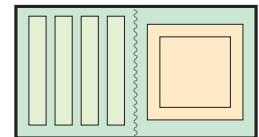
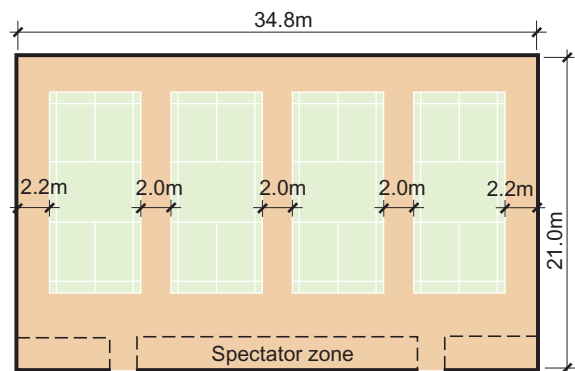


Table tennis/badminton

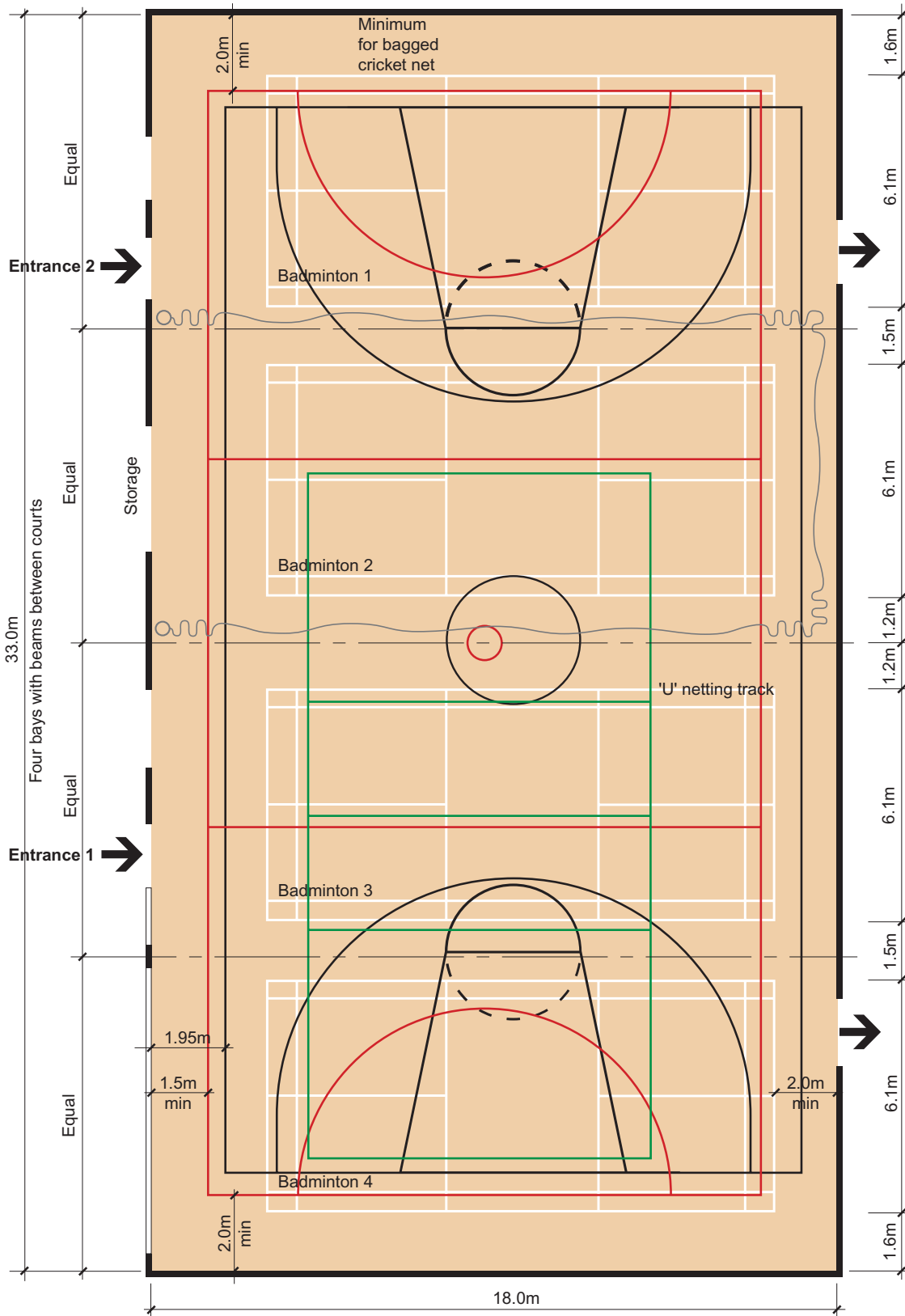


Short bowls/gymnastics

Different uses of a four-court hall.



An example of enhanced dimensions for county level badminton – also ideal for netball.



A 33 x 18 x 7.6m four-court hall.

Six-court hall

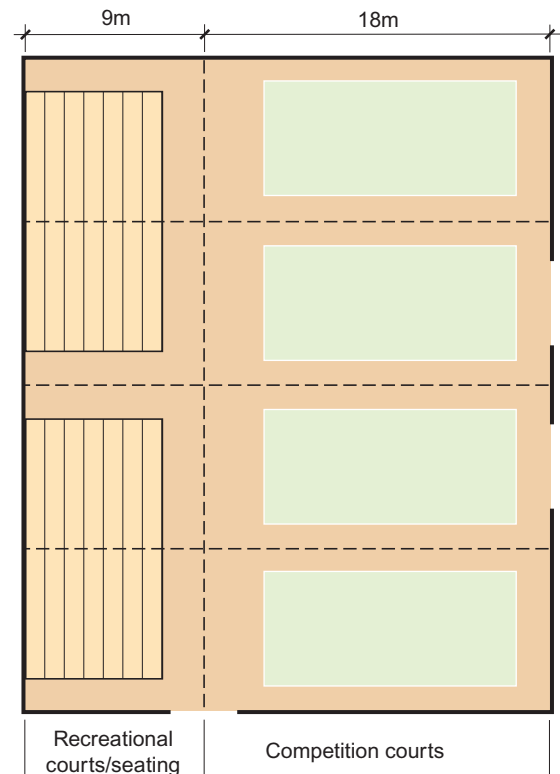
The 33/34 x 27 x 7.6/8.4m hall creates two team sports zones or a competition play area aligned with spectator seating. The 3 + 3 badminton court arrangement is recommended in preference to the 4 + 2 layout originally used in this type of hall. The 34m length provides the required safety margin behind the badminton courts. Further increases in length will be required for county standard play.

Notes

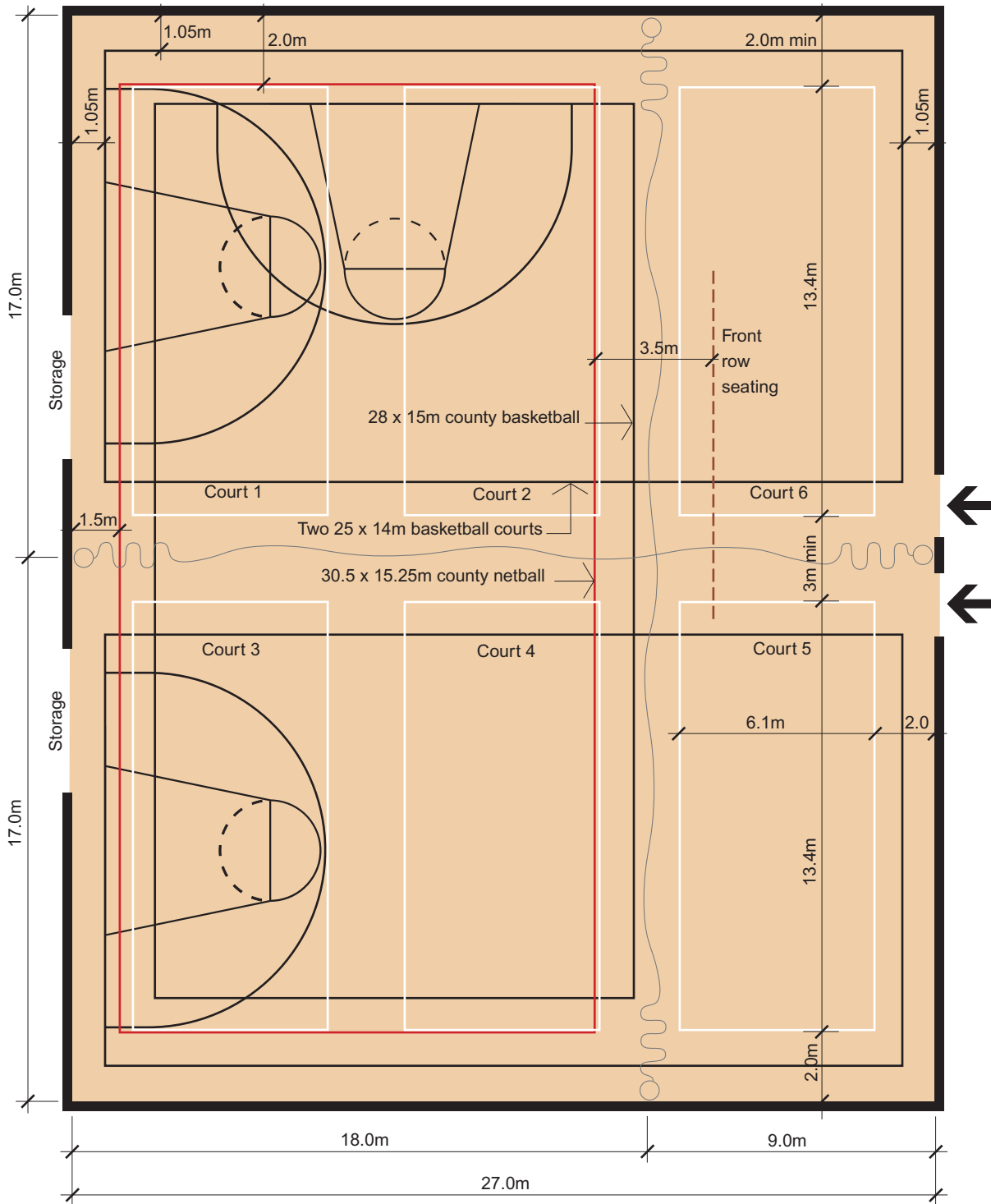
- Align structure between badminton courts to provide three full-span bays or introduce a primary beam across the centre of the hall.
- Division netting is hung between the three rows of courts. It can also be considered between two end courts but this zone is usually designated for retractable seating.
- A height of 9.1m and extra length is required for county standard badminton.
- Two standard basketball courts or two reduced five-a-side football courts can be laid across the hall with modified 'D' end markings.
- Wider pitches for recreational handball, hockey and korfball are possible in the six-court hall as well as more space for sports hall athletics.
- The 4 + 2 badminton court arrangement requires a four-bay structure to ensure that lighting and transverse netting accord with the four primary courts.
- In the 4 + 2 layout shown there is insufficient length to accommodate the full run-back to end-on courts in the 9m zone.



Large halls can be divided into two or more team game or competition zones.



The traditional 33 x 27m layout gives a longer competition court for team games but structure must run between the four primary badminton courts.



A 33/34 x 27 x 7.6/8.4m six-court hall. The minimum area for six badminton courts and ball games.

Sports hall activities in order of popularity

Activity	Hall visits (%)
Badminton	24.4
Keep fit/aerobics/step/yoga	23.6
Indoor five-a-side football	18.3
Martial arts	6.3
Carpet/mat/short bowls	6.1
Gymnastics	3.6
Basketball	2.3
Netball	2.1
Table tennis	1.9
Dance	1.8
Trampolining	1.8
Indoor hockey	1.6
Tennis/short tennis	1.5
Roller skating/roller blading	1.2
Indoor cricket	1.0
Multi-sports session	0.7
Racquetball	0.6
Volleyball	0.6
Boxing	0.4
Archery	0.2
Fencing	0.2
Indoor golf	0.1
Roller hockey	0.1
Other in hall	1.1

Base: All sports hall visits.

Note: Percentages add up to more than 100% as a user could take part in more than one activity during a visit.

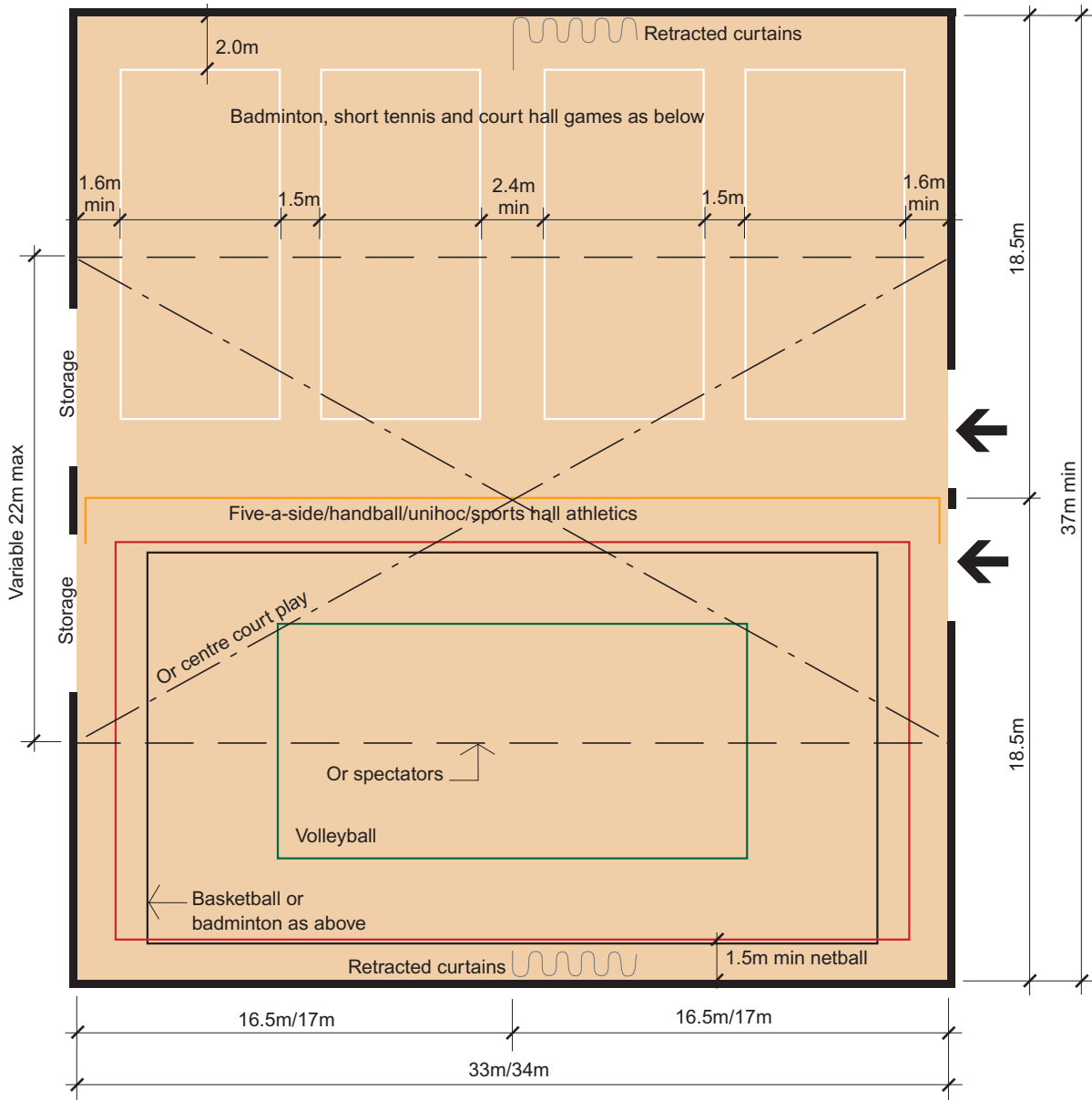
Source: *Survey of Sports Halls and Swimming Pools in England*, Sport England (1999).

Eight-court hall

The critical dimensions are 37 x 33/4 x 7.6 or 9.1m. This hall can be divided into two full-size play zones for most sports hall team games. Height requirements become more demanding as hall size increases and the environmental impact of extra high halls has to be weighed against more restricted use and possible ball damage in too low a hall.

Notes

- This size is particularly suitable for county netball and top division basketball. For netball the court would be marked out to take advantage of the 37m dimension or, preferably, width would be increased.
- Align structure between badminton courts to provide four full bays or introduce a central primary beam.
- Four county standard badminton courts can be marked out or rolled down and require a clear height of 9.1m.
- To accommodate a minimum size indoor hockey pitch, handball or korfbal, length must be increased to 39m.
- These halls can seat upwards of 1,000 spectators for a table tennis final or for other sports with limited space requirements. Escape routes from the hall must take this capacity into account.
- Invariably, eight-court halls are used for non-sports events and access for users and equipment requires extra consideration. An increase in overall area is sometimes justified.



A 37 x 33/34 x 7.6/9.1m eight-court hall. The minimum area for two full zones for ball games. County standard badminton courts would align along the hall length.

Spectator seating

Spectator requirements should be established at the outset as seating capacity is a major determinant in selecting hall dimensions. Additional space can often be justified to increase income or to add flexibility for both sports and non-sports events. Spectator provision can take several forms:

- Chairs or benches lined along the side of the hall and outside the critical overall sports space.
- Casual viewing via glazed screens or a spectator paddock at hall level.
- Retractable units with benching or fold-down chairs mounted in recesses or kept in a separate store. The fold-back units will have a depth of at least 1m which must be added to the hall's dimensions. Seating stores should have external access for delivery and extra high doors may be required.
- Other types of demountable seating stored on site or hired when required.

The critical factors in specifying seating are to provide unobstructed viewing and to maintain spectator safety. Specific provision must be included for viewing from wheelchairs.



Bleacher seating: mobile pull-out units can be arranged around different competition court layouts.

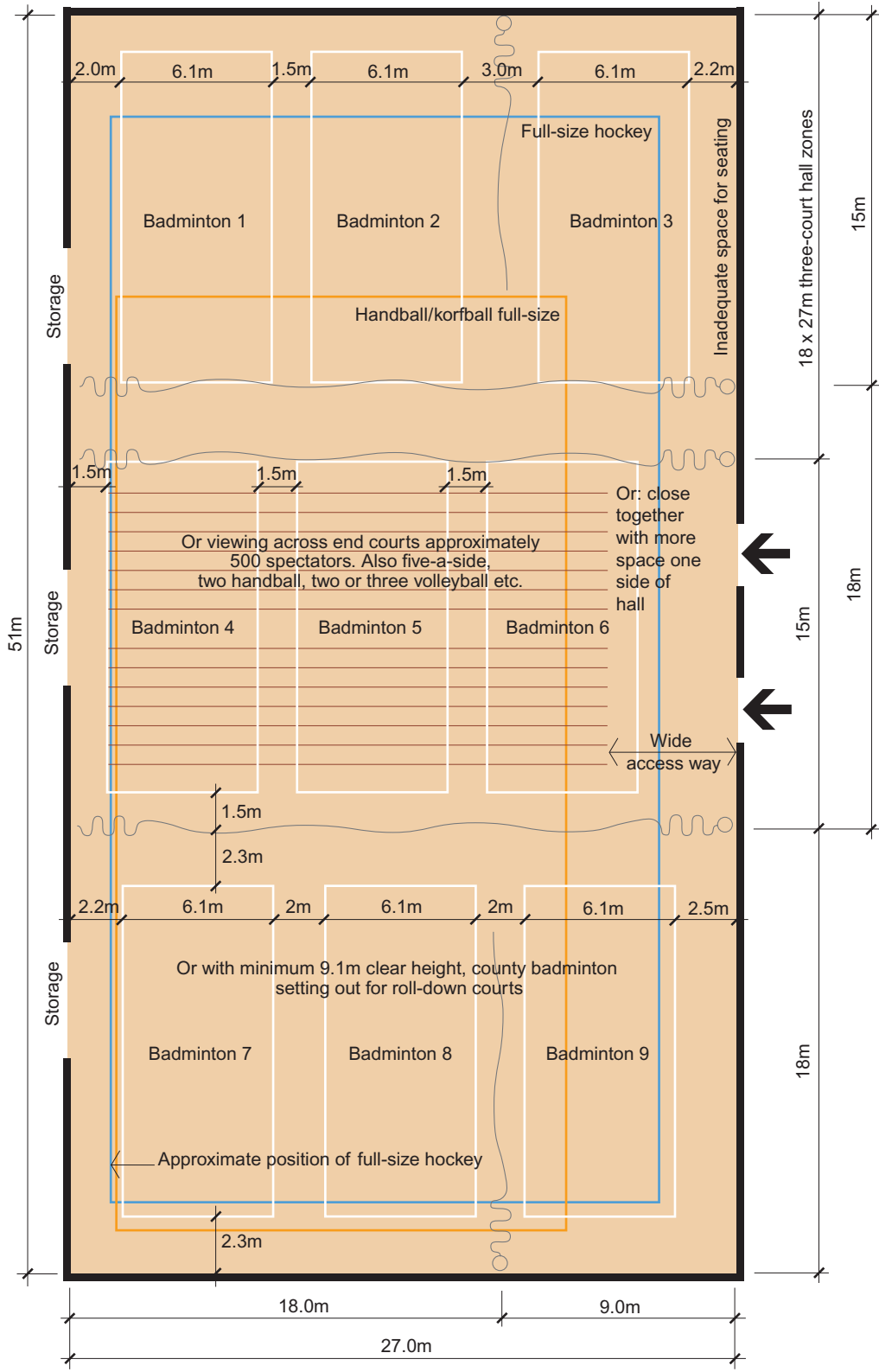
Nine-court hall

This 51 x 27 x 9.1m high hall is suitable for club standard indoor hockey, handball, korfbal and five- or six-a-side football. Its elongated dimensions also provide more scope for sports hall athletics and gymnastics. Spectator capacity within the hall is limited for long pitch games when extra width may be considered worthwhile.

A smaller hall 47m in length would be suitable for a full-size indoor hockey pitch with 1.5m end run-outs but does not provide such a space-efficient layout for badminton.

Notes

- Hall area is 11% greater than the eight-court hall but there is greater sports capacity and, essentially, space for the three long pitch games.
- Run main structure to divide the hall into three zones with secondary structure between badminton courts.
- It can provide three to six activity zones with good access from a circulation route down the length of one side of the hall.
- There is space for six county standard roll-down badminton courts with seating for approximately 500 spectators in the central zone.
- The 27m width does restrict flexibility in laying out the smaller team games and results in more courts being run lengthwise down the hall.
- Narrower dimensions than for the eight-court hall can result in a more economical structural design.



A 51 x 27 x 7.6/9.1m nine-court hall for a full-size indoor hockey pitch and other big pitch sports.

Upgrading sports halls

Some sports halls built during the past 30 years do not conform to current recommended dimensions. Increasing the length is sometimes possible but it is unlikely that the width or clear height can be economically increased. It is never worth spending large sums of money on upgrading halls of substandard size or surrounding them with new accommodation. If they are too small they need to be replaced.

The following notes are offered as a guide to determining the viability of older halls:

- Check clear dimensions. Take site measurements rather than relying on old drawings then compare with current recommended standards.
- If the hall is undersize determine whether a revised court layout will permit current safety and officials' zones to be achieved.
- If clear height is significantly compromised consider a replacement hall as the first option. Anything below 7m over the playing area is now regarded as unsuitable for all but recreational levels of play for sports with specified height requirements.
- Check that safety margins can be met each side of division netting.

If hall dimensions appear suitable check that the following features already exist or can be incorporated:

- area elastic floor to conform to BS 4077: Part 4
- flush wall surfaces from floor to ceiling without recesses or projections and with 50% light reflectance
- outward opening doors flush with the surrounding wall surface
- compact fluorescent light fittings mounted between badminton courts.

Twelve-court hall

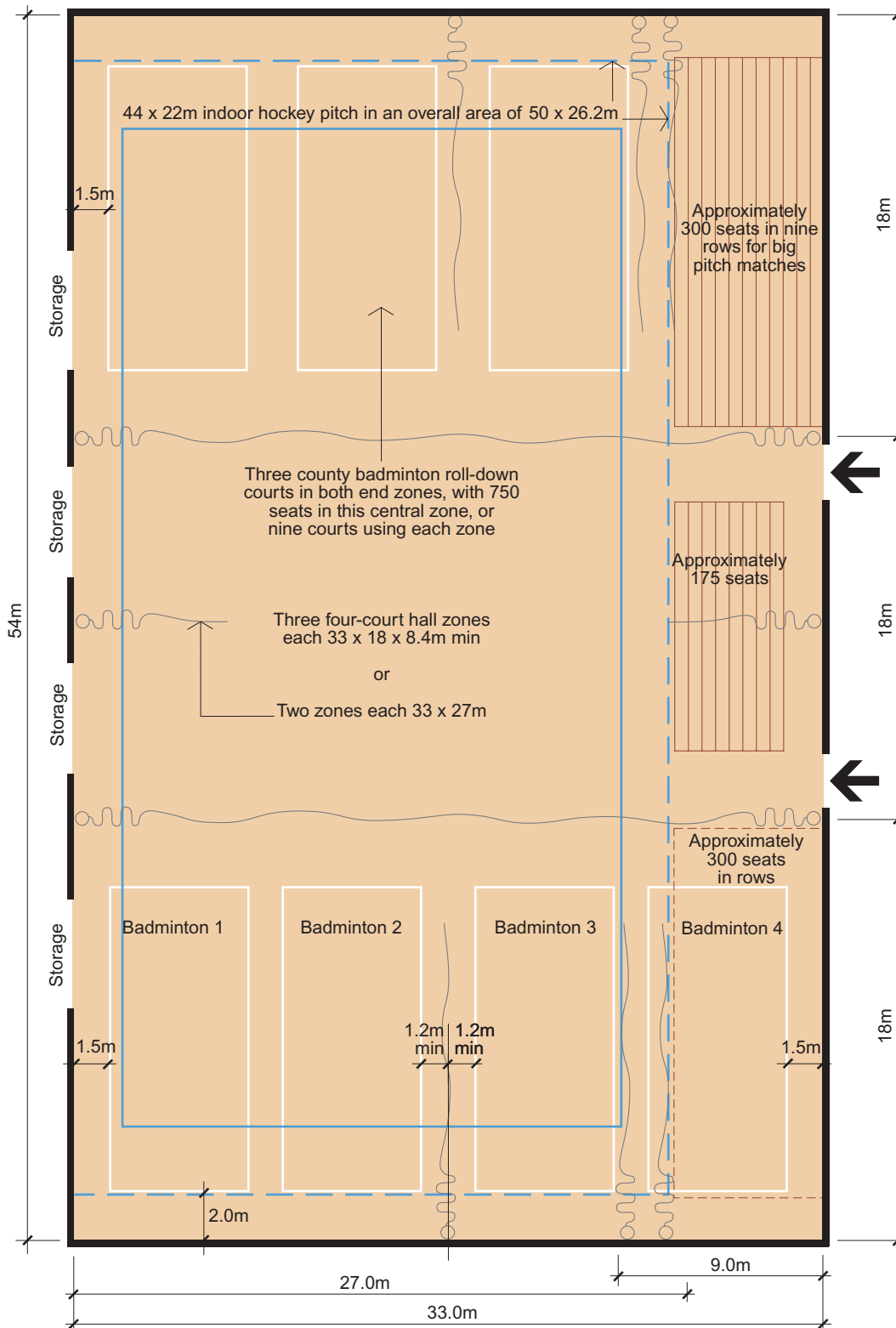
At 54 x 33 x 9.1m this size has the capacity of a small regional arena, a spectator venue for local and county level competition. It is a larger version of the nine-court layout.

Notes

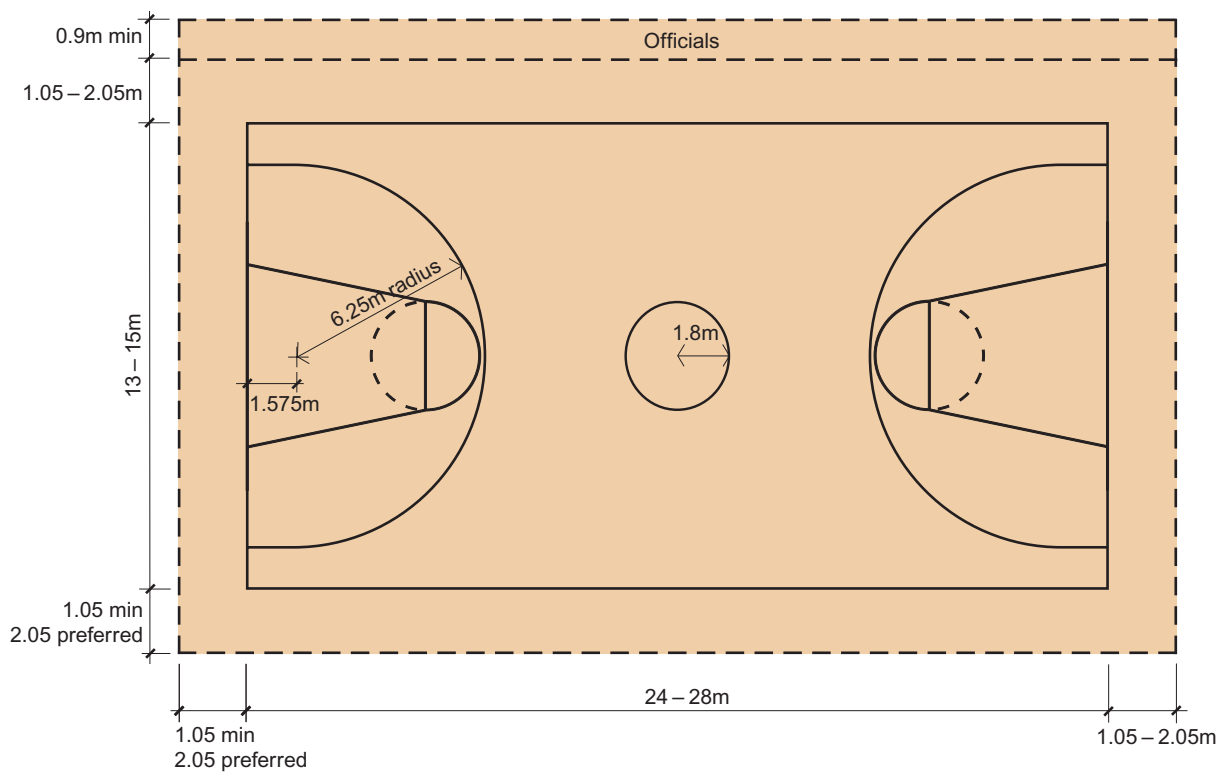
- Three modules of the four-court hall can be arranged by dividing the length into 18m (and variable) width zones or two six-court hall zones.
- Primary structure should run between these zones with secondary structure between badminton courts.
- Extra flexibility is provided by lengthwise subdivision.
- Over 700 seats can be aligned along one side of the hall for handball, hockey or korfbal spectators and more for other sports or entertainment events.
- An increase in width permits banks of seating to each side and possibly also to each end of the competition pitch.



A first generation sports hall with lighting and structure that would be difficult to upgrade to meet current standards.



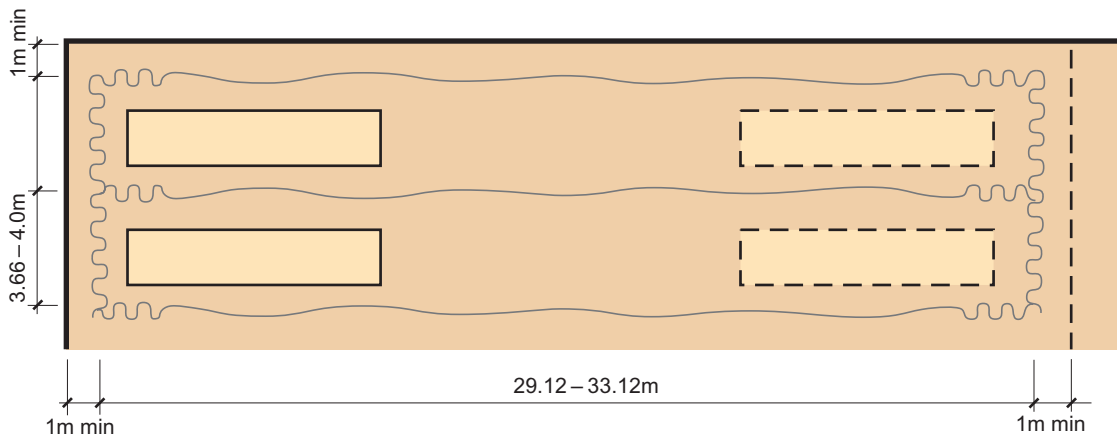
A 54 x 33 x 9.1m twelve-court hall, or the basis for a regional arena. Capacity includes three ball game zones each of four-court hall size, or divided into two zones of 33 x 27m with plenty of spectator seating for hockey and centre-court ball games using the whole hall.



Dimensions of a basketball court.

	Recreational/ Club	County/ Regional	National/ International
Playing area			
Length	24–28	24–28	28
Width	13–15	13–15	15
Out-of-bounds surround	1.05 min	2.05	2.05 min
Extra one side for officials and team areas	0.9 min	3.0	3.0
Minimum overall space			
Area	R: 20.1 x 12.1 C: 30.1 x 18 to 26.1 x 16	32.1 x 22.1 to 28.1 x 20.1	32 x 22.1
Height	R: 6.7 C: 7.0	7.0	7.0

Basketball space requirements (m).

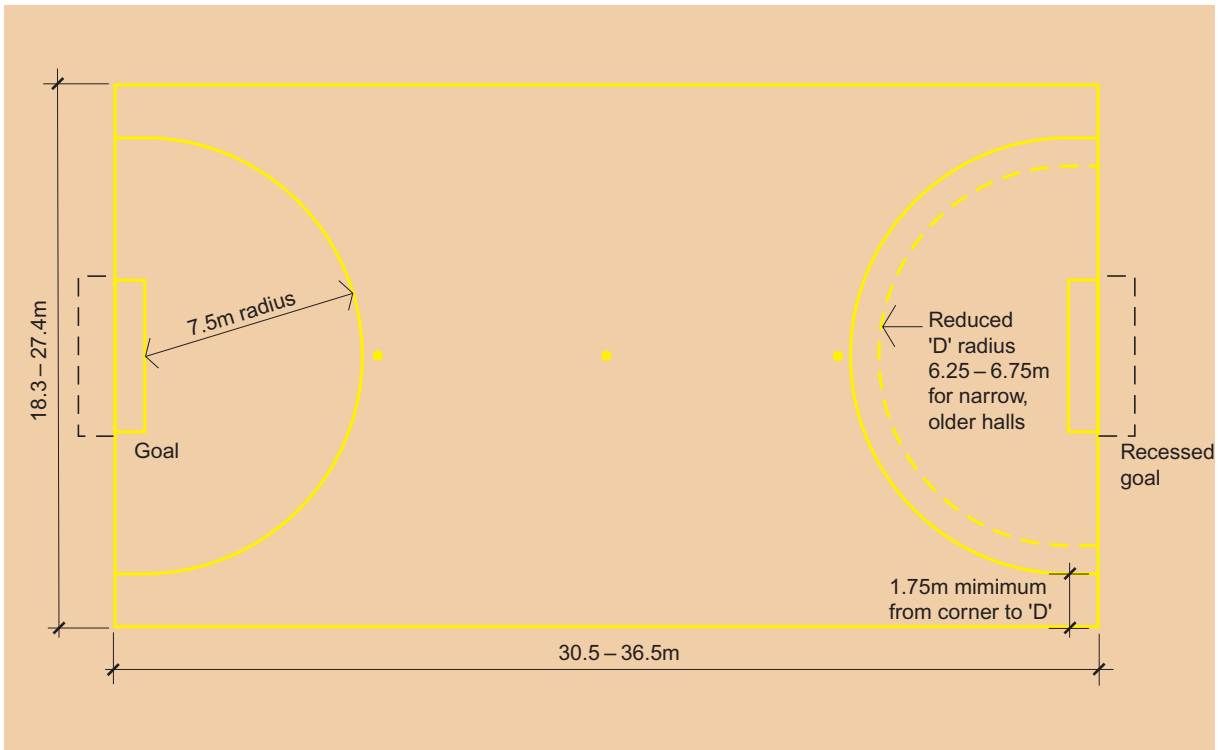


Dimensions for cricket practice.

	Minimum	Recommended maximum
Length	29.12	33.12
Width	3.66	4.0
Height of horizontal top net	4.0	4.5
Safety margin surrounds	1.0	

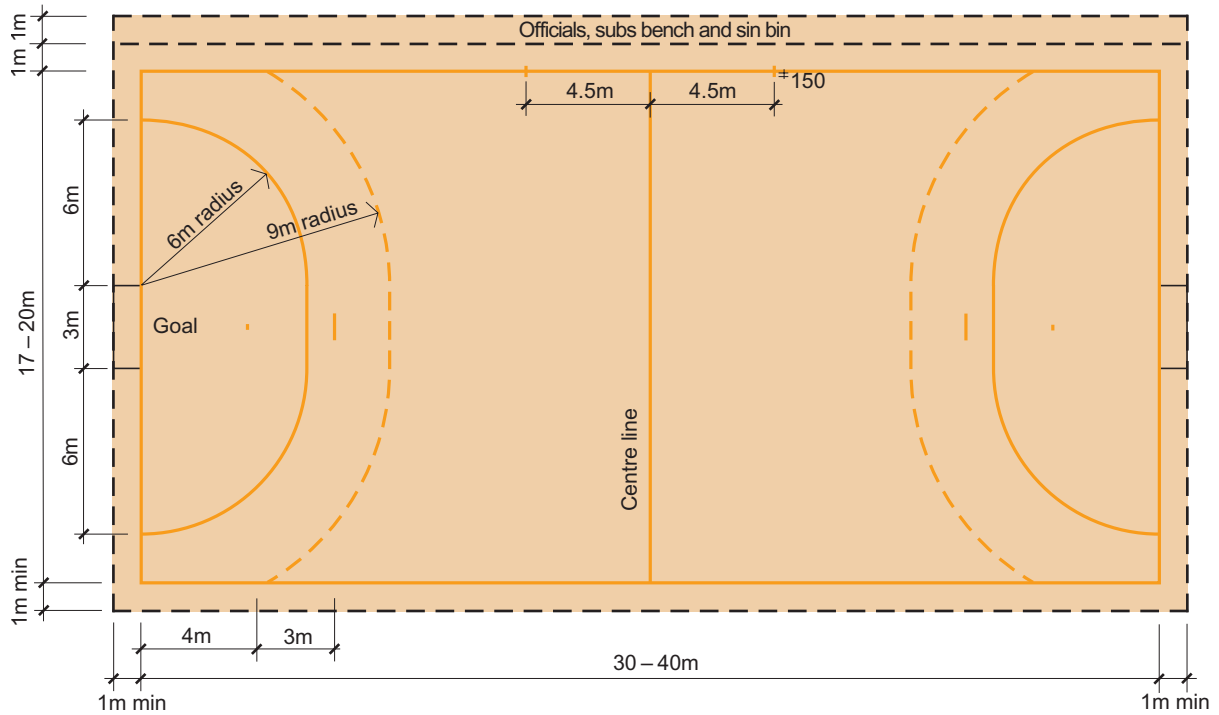
Cricket practice space requirements (m).





Dimensions of a five-a-side football pitch.

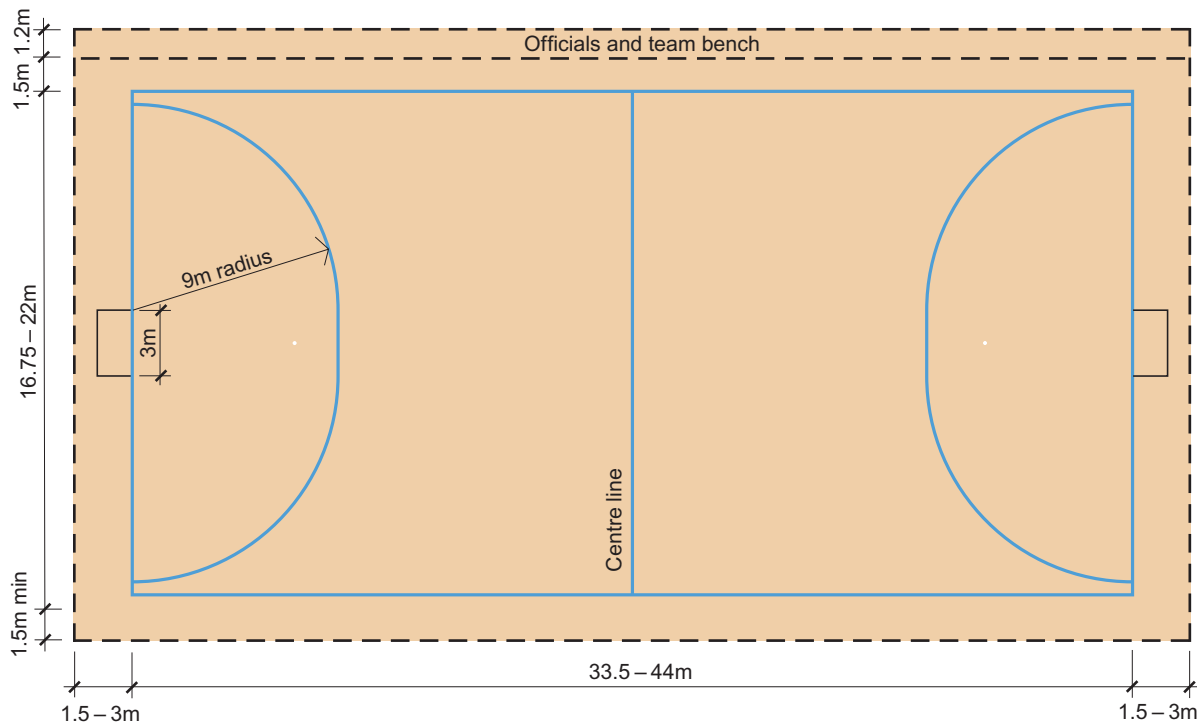




Dimensions of a handball court.

	Recreational	Club/ County/ Regional	National/ International
Playing area			
Length	30	34.5-40	40 min
Width	17 min	18-20	20
Side margins, min	None	1.0	1.0
Officials/team bench space, additional one side	-	1.0	1.0
End margins, min	-	1.0	1.0
Minimum overall space			
Area	32 x 17	36.5-42 x 21-23	42 x 23
Height	6.7-7.6	7.6-9.0	9.0

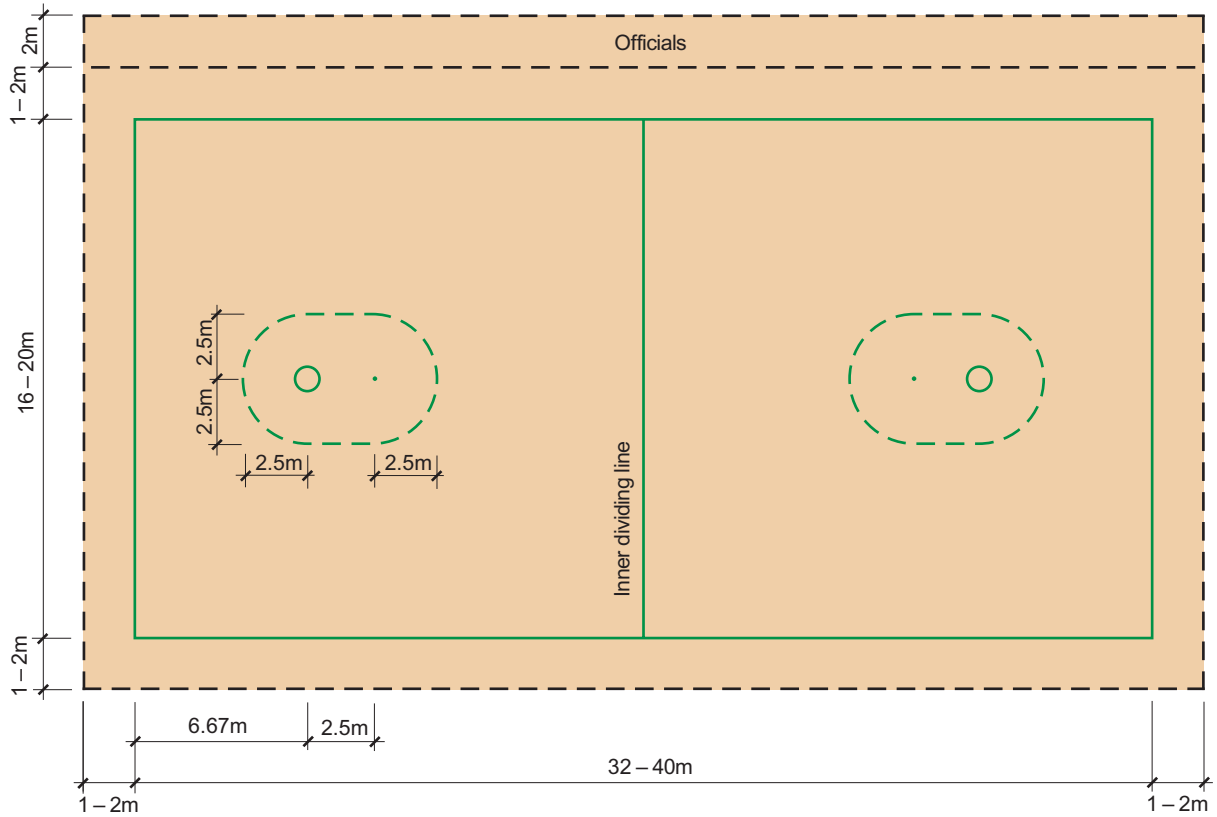
Handball space requirements (m).



Dimensions of a hockey pitch.

	Recreational	Club/ County/ Regional	National/ International
Playing area			
Length (including back lines)	2:1 length/width	36–44 or 33.5	36–44
Width (including 100 x 100mm side boards)	18–22	18–22 or 16.75	–
Run out behind back lines	1.5	1.5–3.0	3.0
Clearance outside side boards	–	1.5 min	1.5 min
Officials' table and team benches (additional clearance on one side)	–	1.2	1.2
Overall area	2:1	39–50 x 22.2–26.2 or 36.5 x 21	42–50 x 22.2–26.2
Height	No prescribed minimum height		

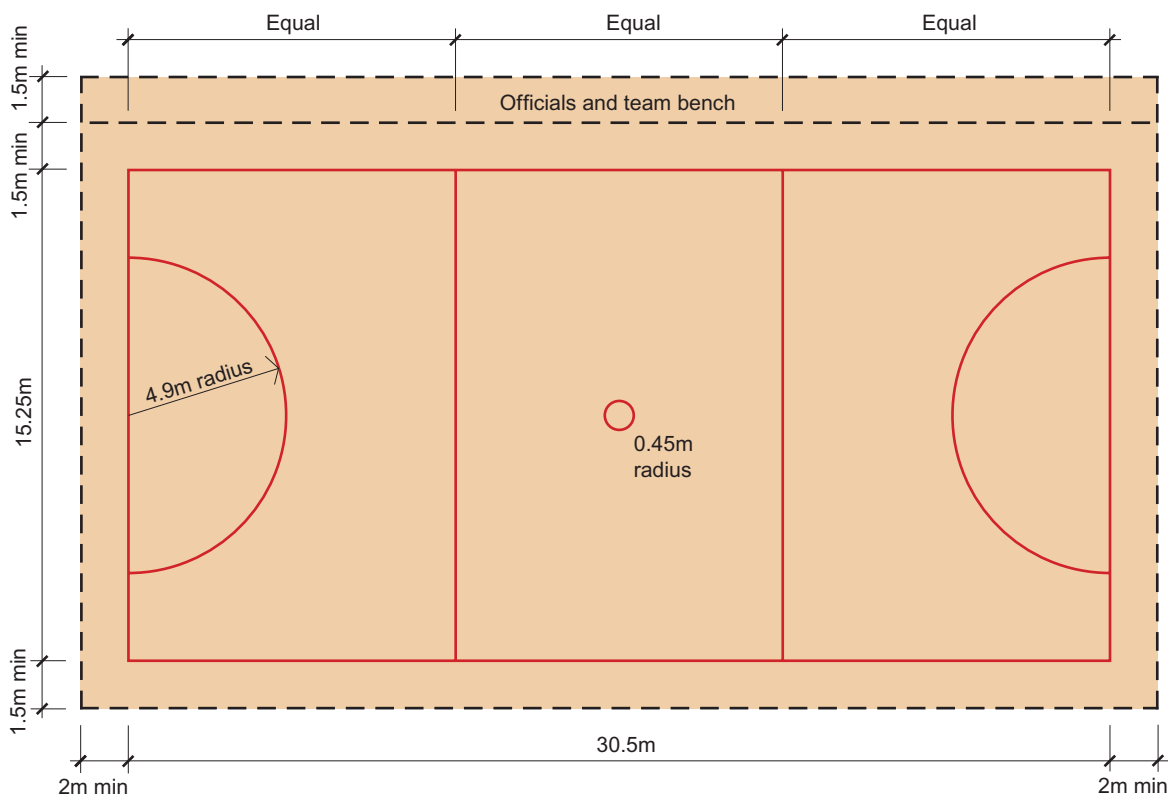
Hockey space requirements (m).



Dimensions of a korfball pitch.

	Recreational	Club/ Intercounty	National/ International
Playing area			
Length	32–36 min	36–40	40
Width	16–18 min	18–20 min	20
Side margins	1–2.0	2.0	2.0
Extra margin for table and bench	–	2.0	2.0
End margins	1–2.0	2.0	2.0
Minimum overall space			
Area	34 x 22 to 49 x 22	40 x 22 to 44 x 26	44 x 26
Minimum height	7.0	9.0	9.0

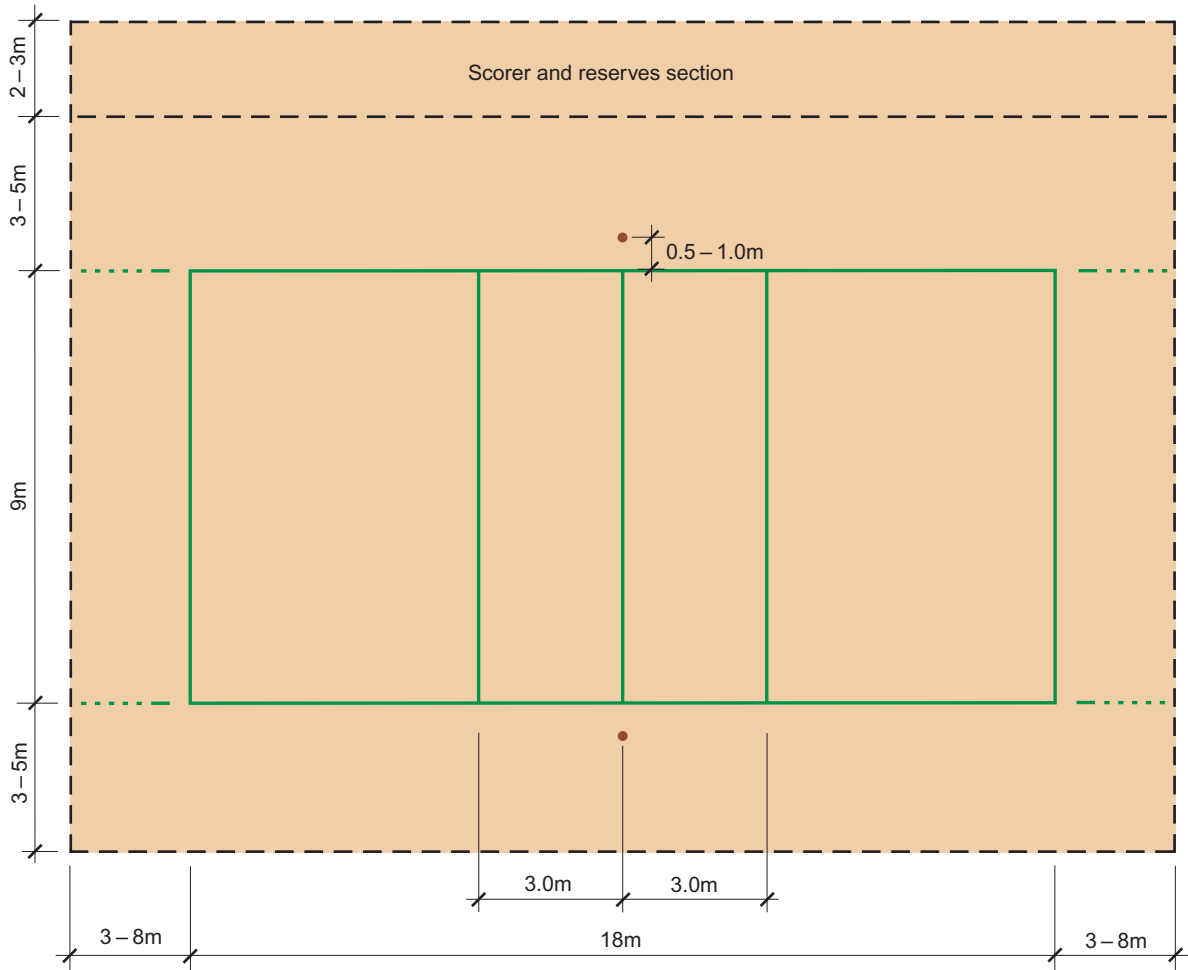
Korfball space requirements (m).



Dimensions of a netball court.

	Recreational	Club	County	Regional/ National
Playing area				
Length	30.5	30.5	30.5	30.5
Width	15.25	15.25	15.25	15.25
Margin along sidelines	1.5*	1.5*	1.5*	1.5–2.0*
Extra margin for match tables and team benches	–	–	1.5 min	1.5
Margin space behind goal lines, min	2.0 ⁺	2.0 ⁺	2.0 ⁺	2.0 ⁺
Overall area	34.5 x 18.25	34.5 x 18.25	34.5 x 19.75 min	34.5 x 19.75–20.75
Minimum height	6.7–7.0	7.0–7.6	7.6	7.6
* 2m between parallel undivided courts				
+ 3m between end-on courts				
Note: In standard and undersize sports halls, court size must be reduced to maintain minimum run-off margins.				

Netball space requirements (m).



Dimensions of a volleyball court.

	Recreational	Club/ County/ Regional	National	International
Playing area				
Length	18.0	18.0	18.0	18.0
Width	9.0	9.0	9.0	9.0
Backline clear space	3.0	3.0	5.0	8.0
Sideline clear space	3.0	3.0 min	3.0 min	5.0
Officials' space (additional on one side)	–	2.0	2.0	3.0
Spectators' margin (additional on the other three sides)	–	–	2.0	3.0
Minimum overall space				
Area	24 x 15	24 x 17	28 x 19	40 x 25
Clear height	7.0	8.0	10.5	12.5

Volleyball space requirements (m).



Court markings show up well on this beech floor and the badminton court zones are clearly defined.

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Sport England is the brand name of the English Sports Council which is the distributor of Lottery funds to sport.

© Sport England, February 2000
SE/980/5M/2/00
16 Upper Woburn Place, London WC1H 0QP
Tel: 020 7273 1581. Fax: 020 7273 1710
www.english.sports.gov.uk

Design concept by GDA Creative Solutions

Produced by NBA Tectonics

Photography by Alastair Carew-Cox, Alan Edwards, Charlie Fawell and Richard Sowersby

Printed in England by Belmont Press



Ref: 980
£10
ISBN 1 86078 108 X