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An assessment of the behaviour of a shot hit from the golf tee.

Hazard: the potential to cause harm

Risk: the likelihood of it happening in your circumstances of use.

THE HAZARD

One of the most controversial aspects of golf is the affect errant golf shots have on other golfers, neighbouring areas and passers by. There have been several court claims regarding this and a recent case illustrates the liability of both the club and the golfer.

In UK each year, according to the Insurance companies, there are around 7000 to 12,000 golf related accidents which require attending the Accident and Emergency Room. It is unclear how many of these are accidents from the golf club or from the golf ball.

Statistics compiled by Golfplan Insurance show that some 12,000 golfing accidents occur annually of which just over 3,500 accidents involve head injury.

It would appear that the most dangerous accidents are where the golfer is attempting to give the most speed to the club ie using a wood or a low numbered iron. This can occur at the tee or on the second shot of long holes. The golf club can anticipate the direction of the teeshot but, as the second shot is taken where the ball lands, the club cannot anticipate where the second shot is taken from. This stroke is the responsibility of the golfer.

There are some 4000 golf courses in UK (500 in Scotland, the rest in England and Wales). As each golf course has on average around 40000 rounds and 18 holes, this amounts to around 720,000 teeshots per course and 2,880,000,000 tee shots over the UK per annum.

If we assume all the accidents are from teeshots, only 12,000 cause accidents requiring the attention of the A&E. In other words 0.000416667% of teeshots or under 1 accidents per 240,000 teeshots:

Responsibility of the Club

The Golf Club is responsible for supplying a safe venue to carry on the game of golf. It expects all golfers to adhere to the 'Ettiquette, Safety & Rules of golf.

If a particular hazard is identified, the club under their duty of care has a responsibility to warn the golfer, neighbours and passers by of the hazard. This is normally done by design of the holes to guide people away from the hazard or adequate signage. Walkers accessing paths on the golf course should be warned by a sign that 'Golf is in progress - Please take care'.

The Responsibility of the golfer

In the rules of golf, under ettiquette and safety, the following must be noted:

Safety

Prior to playing a stroke or making a practice swing, the player should ensure that no one is standing close by or in a position to be hit by a club, the ball or any stones, pebbles, twings or the like which may be moved by the stroke or swing.

Consideration for other players

No player should play until the players in front are out of range

This has been used in every case that has come to court to underline the duty of care which the golfer has to another golfer or anyone else who would be affected by his shot.

Information from Past accidents

Looking at past accidents, the teeshot is the main source of hazard from hitting a golf ball. Deaths have occurred from being hit on the forehead or temple in the first 150 yards from the tee. Serious injuries occur from being hit on head or neck and back of hand in the first 250 yards from the tee. Minor injuries occur from being hit anywhere on the body after 250 yards from the tee or outwith a 80 yard offset parallel to the intended line of teeshot. In the assessment diagram which follows, I have added 50 yards onto these figures for added safety.

There are some general safety considerations which should be followed:

All persons on a golf course should be encouraged to wear some form of head protection e.g.a baseball hat, with stiff brim and some form of padded insert, or even just a double skinned wooly hat will give some protection.

It is essential that people know that in the event of hearing 'fore' the person must turn away and cover their head with their arms for a period of 8 seconds

In a mixed group, the men should always play before women play as very few women will walk back to a place of safety after they take their shot from the Ladies Tee which can be 30 yards in front of the Men's Tee.

About the ball

Golf balls being hit travel at different speeds, angles and distances depending on the club and ball.

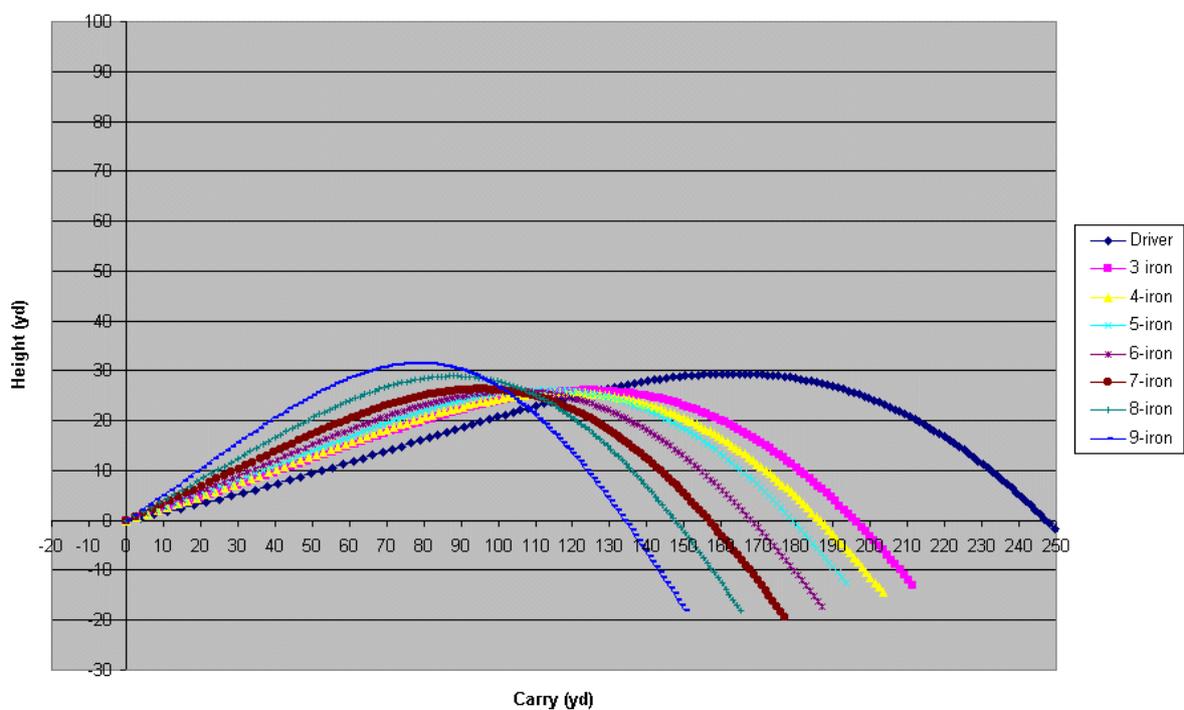
Generally the speed of the ball is dependent on the speed of the club and the 'compression' of the ball when hit – generally the ball goes at a speed 50% greater than the club speed.

E.g. 80 mph of club speed will result in 120 mph ball speed. This will depend on the characteristics of the club and ball being used.

The speed of the ball when it lands is generally around 33% of the initial speed of the ball.

The following are some measurements quoted for speed, flight, height and carry of a golf ball. It is important not to be confused as some measurements are given in metres and some in yards - golf is usually measured in yards.

Height vs Carry of Various Clubs



www.probablegolfinstruction.com

Club	Speed (m/s)	Launch Angle	Spin (rpm)	Max Height (m)	Carry (yd)	Time (s)
Driver	70.9	8.5	3504	29.7	249.2	6.6
3-iron	56.3	11.8	5453	26.1	195.7	6.0
4-iron	54.2	12.4	6281	25.7	186.8	5.9
5-iron	52.6	13.4	7250	26.3	179.4	5.9
6-iron	50.0	15.0	8036	25.9	167.9	5.8
7-iron	47.2	17.6	8795	26.3	153.3	5.7
8-iron	45.2	21.3	9850	29.0	147.3	5.8
9-iron	42.3	26.6	10729	31.5	133.9	5.8

www.patryangolf.com

Club Number	Handicap 0				Handicap 10				Handicap 20				Handicap 27.5			
	Height	Flight	Bounce and roll	Total	Height	Flight	Bounce and roll	Total	Height	Flight	Bounce and roll	Total	Height	Flight	Bounce and roll	Total
	Distance in yards				Distance in yards				Distance in yards				Distance in yards			
1w	36	254	27	281	25	218	33	251	16	178	39	217	10	135	44	179
3w	37	241	26	267	26	210	30	240	17	171	36	207	10	127	41	168
2i	40	225	10	235	28	197	17	214	19	162	26	188	11	121	37	158
3i	46	216	7	223	33	192	12	204	22	162	19	181	14	124	30	153
4i	50	205	5	210	37	185	8	193	25	157	15	172	16	123	23	146
5i	53	193	3	196	40	175	6	182	28	151	11	162	18	120	18	138
6i	55	176	2	178	42	162	4	166	30	140	8	148	20	113	14	127
7i	56	159	1	160	43	147	3	150	32	129	5	134	21	105	10	115
8i	55	142	1	143	43	132	2	134	32	116	4	120	22	96	7	103
9i	53	126	1	127	42	117	1	118	31	104	2	106	21	86	5	91
PW	46	99	0	99	36	91	1	92	28	81	1	82	20	66	3	69
SW	43	88	0	88	34	81	0	81	26	72	1	73	19	59	2	61

w = Wood i = Iron PW = Pitching Wedge SW = Sand Wedge

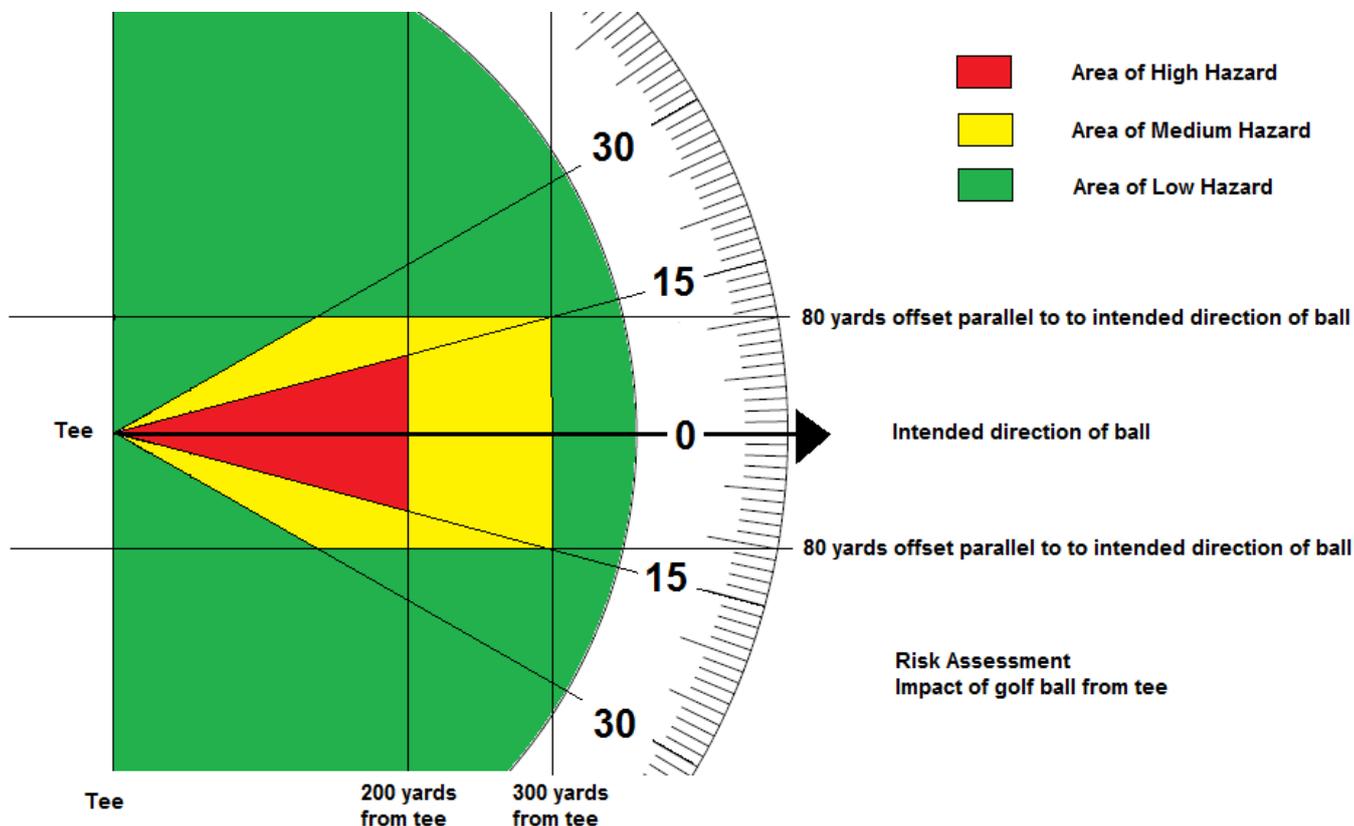
PGA Design Golf Driving Ranges a Design Guide
How Golf Clubs really work F Werner & R Greig ISBN 9677625-0-2

92 % of teeshots will fall within a 15° arc on each side of intended direction

99 % of teeshots will fall within a 30° arc on each side of intended direction

99 % of teeshots will fall within an offset of 80 yards parallel to the intended direction.

For an explanation of the angles, see Publication PGA Design Golf Driving Ranges a Design Guide



Questions to ask when assessing the risk on your course:

Does any tee expose any golfer, greenkeeper or member of the public to red or yellow areas?

Do you have any holes which cross or are close enough that the above is a problem?

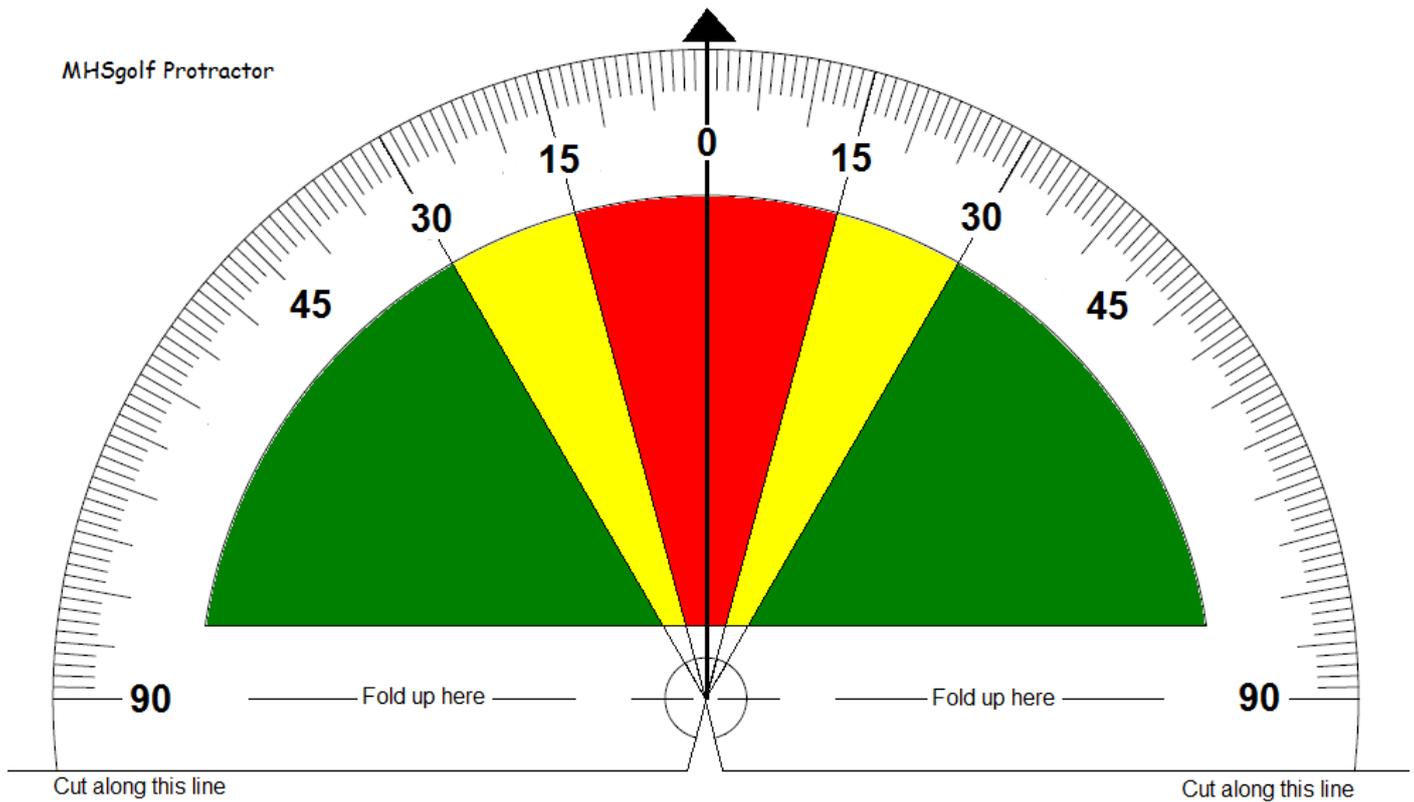
Have you any paths which expose golfers, greenkeepers or the general public to as described above?

Have you informed people of the risk?

Do you have a practice area and does the practice area conform to the above?

What reports have you had of golf ball injuries in the past 5 years and what action have you taken if appropriate?

The following can be cut out and used to determine the High Risk Area when standing on each tee.



Identification of “Direction of Ball Hazard” using Protractor

How to use

1. Cut along the line indicated
2. Cut 'Gun sight' notch
3. Fold edge upwards along the line as indicated
4. Stand on the tee where the golfer would stand for his shot
5. Hold the protractor in front of you, level with your mouth
6. Looking along the 'Gun sight', with one eye closed, aim black arrow along intended direction of shot
7. Hold the protractor still and move head to see line of 15° and what is included in this area – RED : HIGH HAZARD
8. Similarly hold the protractor still and move head to see line of 30° and what is included in this area – YELLOW : MEDIUM HAZARD
9. Outside of this line is GREEN : LOW HAZARD

RISK ASSESSMENT.

I enclose an overlay of the above angles. This will allow you to easily identify High Hazard (red), Medium Hazard (yellow) and Low Hazard (green) areas.

If you do not have scale maps, or accurate Stroke Savers, aerial photographs can be downloaded free of charge from Google Maps or Bing Maps. From the scale given the 200 yard or the 300 yard line can be marked. (200 yards is approx 180 metres)

The Red areas are the areas of greatest hazard and **no-one should be in this area when the tee shot is being taken.**

Please look at where the adjacent tees are for any other hole. The most common is the problem of the Par 3 hole with the next tee to the side or rear of the green.

Signage may be required on the tee

E.g.: please do not play until the group in front has left the next tee and moved to a safe position

Or

Please do not play if there is a group teeing off on the xx tee to the left of the fairway and until they have moved to a safe position.

It may be that you decide some areas require fencing – if chain link, the holes must be small enough that a speeding golf ball will not go through (23mm mesh). The fencing should be high enough to provide protection. The fencing will also require a regular inspection and repair if necessary.

The height of fencing is somewhat controversial. In driving ranges it is expected that a fence of 15m height is required if erected 3-10m parallel to the direction of play. A minimum height of fence at the outside of the Medium (Yellow) Risk area would be 3 metres height. It may be local circumstances would increase this height.

The Yellow areas are less likely to occur and as the shots in this area are sliced or hooked, the force is proportionately less

If there are rights-of-way going through such areas, the public must be warned by signs as they enter the yellow area from both directions.

It is in this area that problems of adjacent back gardens usually occur and balls are found in the garden with varying degrees of regularity causing some concern to the owners

The Green areas are relatively safe and of low risk.

Insurance

The club will have Public Liability Insurance, which in all normal circumstances will cover the club against claims.

However, the golfer may not have Insurance Cover. The insurance companies say that 90% of golfers have no Insurance cover. Members should be encouraged to take out an Insurance Policy – recently quoted at £22.50 per annum.

Some clubs have purchased Insurance cover for all members playing at the club for less than £5.00 per member, and added this on to the annual subscription. It should be noted this does not cover the club member at other courses. The clubs have also arranged for cover for 'day members' (visitors) and added that amount onto the round or day rate charged.

Scottish Outdoor Access Code

The Land Reform (Scotland) Act 2003 gives the Scottish people some of the best access rights in the world but all access is treated equally.

Scottish National Heritage have given advice

<http://www.snh.org.uk/publications/on-line/access/knowthecodeenglish.asp>

Specifically their advice on Golf Courses is:

<http://www.snh.gov.uk/docs/A342167.pdf>

Golf courses

You can only exercise access rights to cross over a golf course and in doing so, you must keep off golf greens at all times and not interfere with any golf games or damage the playing surface. Golf courses are intensively used and managed, and there can be hazards such as where golfers are playing "blind" shots.

In exercising access rights:

- allow players to play their shot before crossing a fairway;
- be still when close to a player about to play;
- follow paths where they exist; and
- keep your dog on a short lead.

To avoid damaging the playing surface, cyclists and horse riders need to keep to paths at all times and not go on to any other part of a golf course.

When fertilisers or pesticides have been used, the duration of any hazard depends on the material used but should not normally extend more than a few days.

Golf course managers can ask you to avoid using particular routes at these times. Following such advice can greatly help to minimise risks to safety.

Responsible behaviour by land managers

Wherever possible, provide paths around or across the course and/or advise people on the safest ways through the course. This will help to minimise safety risks.

In winter, many people enjoy activities like sledging and cross-country skiing on golf courses. This can be important to local communities. These activities rarely cause any problems if done responsibly – by keeping off greens, tees and bunkers – and when there is sufficient snow cover.

Golf course managers are encouraged to accept such access when it is carried out responsibly.