Metrics

This collection of numerical data should be a useful reference for level designers asking themselves questions like:

- will the player be able to climb this stairs smoothly ?
- will the player be able to jump this ?
- will the player die from this fall ?
- will the player pass through this gap ?
- etc.

MAXIMUM WALKABLE HEIGHT : 3.50

Note

- Don't forget that any height can be made walkable by setting Wall Flag 3 bit 1.

MAXIMUM JUMPABLE HEIGHT : 9.65

Notes

- It doesn't matter if you're running or not
- It doesn't matter if you're crouching or not
- Don't forget that any height can be made walkable by setting Wall Flag 3 bit 1.

DAMAGE FROM FALLING :

HEIGHT	MIN	MAX	MEAN	Notes
36	0	0	0	(1)
37	0	1	0	(2)
40	4	9	6	
45	19	23	21	
50	31	35	33	
55	43	48	44	
60	54	58	56	
65	67	71	69	
70	77	78	77	
75	87	91	89	
79	93	98	95	(3)
80	95	++	98	(4)
81	98	++	++	(5)
82	++	++	++	(6)

Notes

(1) Maximum "no damage" fall
(2) 1 point of damage happened twice in 30 falls.
(3) Maximum "no death" fall
(4) % death : 3/11 = 27%
(5) % death : 12/19 = 63%
(6) Minimum "sure kill"

- Shields or Supershield are of no help
- LAIMLAME totally protects you (at least up to 3000).
- Crouching doesn't affect the damage taken.

- Jumping up before the fall does of course add to it.
- Sprinting when hitting the ground doesn't change anything.
- The current health doesn't affect damage.

Effects of second altitude:
1) A positive second altitude (water) must be added to the height of the fall.
   I.e. the water doesn't break the fall at all, it increases the damage :-)
2) A negative second altitude (platform) must be subtracted from the height of the fall.
3) In both cases the results are consistent with the equivalent fall from the sum or difference of heights.

[All falls tested between 10 and 30 times.]

MINIMUM WALKABLE WIDTH : 4.90

Notes
- This is a width between two angles of columns in a room.
  Passing between those two isn't exactly the same as walking in a 4.9 wide corridor !
- When running you may sometimes pass through a gap as little as 4.6
  I strongly believe this is a problem in the engine collision detection.

MINIMUM WALKABLE HEIGHT : 6.80

Note
The generally adopted rule of thumb of 1 DF unit = 1 foot would make Kyle very big (207 cm).
I believe we should use **1DF unit = 25 cm** instead.

MINIMUM CROUCH HEIGHT : 3.00

LONGJUMPS

Standing	~14
Walking	~20
Running	~40

Notes
- These values assume that the start and end altitudes of the jump are the same.
- DF levels must be set on low gravity worlds :-)