FRAX ® WHO Fracture Risk Assessment Tool

Japan - The probabilities of a major osteoporotic fracture in men

The following tables give the 10-year probability (%) of a major osteoporotic fracture (hip, clinical spine, forearm or proximal humerus fracture) according to the T-score for femoral neck BMD , the number of clinical risk factors (CRF) and age. Each table provides a mean estimate and a range, based on the epidemiology of Japan. The range is not a confidence interval, but because the weight of different risk factors varies, is a true range.

Note that the BMI is set at 24 kg/m².

Age = 50 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	14	9.1	6.5	4.9	3.9	3.3	2.8	2.5	2.2	2.2	2.1
1	21 (18-26)	14 (12-18)	9.8 (8.0-12)	7.4 (5.6-9.3)	5.9 (4.2-7.5)	4.9 (3.4-6.5)	4.2 (2.8-5.7)	3.7 (2.4-5.1)	3.4 (2.2-4.7)	3.2 (2.1-4.5)	3.1 (2.0-4.4)
2	30 (24-41)	21 (16-29)	15 (11-20)	11 (7.4-16)	8.8 (5.4-14)	7.3 (4.2-12)	6.2 (3.4-10)	5.4 (2.9-9.3)	5.0 (2.6-8.6)	4.8 (2.4-8.3)	4.6 (2.3-8.0)
3	42 (31-54)	30 (22-39)	21 (15-31)	16 (9.9-25)	13 (7.1-21)	11 (5.5-19)	9.0 (4.4-16)	7.9 (3.7-15)	7.2 (3.3-14)	6.9 (3.2-13)	6.6 (3.0-13)
4	56 (41-67)	41 (28-48)	30 (20-39)	23 (15-32)	18 (12-27)	15 (9.0-23)	13 (7.2-21)	11 (6.1-19)	10 (5.4-17)	9.7 (5.1-17)	9.4 (4.8-16)
5	70 (60-77)	54 (44-59)	41 (32-47)	31 (24-38)	25 (19-32)	21 (16-28)	18 (13-24)	15 (11-22)	14 (9.9-20)	14 (9.3-19)	13 (8.9-19)
6	82	68	53	42	34	28	24	21	19	18	18

Ten year probability of osteoporotic fractures (%) according to BMD, the number of clinical risk factors (CRF) and age in men from Japan.

Age = 55 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	15	10	7.7	6.0	4.8	4.0	3.4	3.0	2.7	2.6	2.5
1	22 (20-26)	16 (13-19)	12 (9.2-14)	8.9 (6.7-11)	7.2 (5.1-9.2)	6.0 (4.1-7.9)	5.1 (3.4-6.9)	4.4 (2.9-6.1)	4.1 (2.6-5.7)	3.9 (2.5-5.4)	3.7 (2.3-5.2)
2	31 (26-41)	23 (18-30)	17 (12-23)	13 (8.7-19)	10 (6.5-16)	8.7 (5.1-14)	7.4 (4.1-12)	6.4 (3.5-11)	5.9 (3.1-10)	5.6 (2.9-9.7)	5.4 (2.8-9.2)
3	43 (33-52)	32 (24-42)	24 (16-35)	18 (12-29)	15 (8.5-25)	12 (6.6-22)	11 (5.4-19)	9.2 (4.5-17)	8.5 (4.1-16)	8.0 (3.8-15)	7.7 (3.6-14)
4	56 (43-63)	43 (31-52)	33 (23-43)	26 (18-36)	21 (14-31)	17 (11-27)	15 (8.6-24)	13 (7.2-21)	12 (6.5-20)	11 (6.0-19)	11 (5.7-18)
5	69 (60-74)	55 (46-61)	43 (36-50)	35 (28-42)	28 (22-36)	24 (19-32)	20 (15-28)	18 (13-25)	16 (11-23)	16 (11-22)	15 (10-21)
6	79	67	55	45	37	31	27	24	22	21	20

Age = 60 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	16	12	8.8	6.8	5.5	4.5	3.8	3.3	3.0	2.8	2.7
1	23 (21-27)	17 (14-20)	13 (10-15)	10 (7.6-12)	8.1 (5.9-10)	6.7 (4.7-8.8)	5.6 (3.8-7.6)	4.8 (3.2-6.7)	4.5 (2.9-6.2)	4.2 (2.7-5.9)	3.9 (2.5-5.6)
2	32 (27-40)	24 (19-31)	18 (14-25)	14 (10-21)	12 (7.5-17)	9.6 (5.8-15)	8.1 (4.7-13)	7.0 (3.9-11)	6.4 (3.5-11)	6.0 (3.2-10)	5.7 (3.0-9.6)
3	43 (35-52)	33 (26-43)	26 (18-36)	20 (13-31)	16 (9.9-26)	14 (7.7-23)	11 (6.1-20)	9.9 (5.0-18)	9.1 (4.5-17)	8.5 (4.1-16)	8.0 (3.8-15)
4	55 (44-62)	44 (33-53)	34 (26-45)	28 (20-38)	22 (16-33)	19 (12-29)	16 (9.7-25)	14 (8.0-22)	13 (7.1-21)	12 (6.5-20)	11 (6.0-19)
5	66 (60-71)	55 (48-61)	45 (38-52)	36 (30-45)	30 (25-38)	25 (21-33)	21 (17-29)	19 (14-26)	17 (12-24)	16 (11-23)	15 (10-22)
6	76	66	56	47	39	33	28	25	23	22	20

Ten year probability of osteoporotic fractures (%) according to BMD, the number of clinical risk factors (CRF) and age in men from Japan.

Age = 65 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	17	13	10	7.9	6.4	5.3	4.4	3.8	3.5	3.2	3.0
1	24 (21-27)	19 (16-21)	14 (12-17)	11 (8.8-14)	9.2 (6.8-12)	7.6 (5.4-10)	6.4 (4.4-8.6)	5.5 (3.7-7.6)	5.1 (3.3-7.1)	4.7 (3.0-6.6)	4.3 (2.8-6.2)
2	33 (28-40)	26 (21-32)	20 (15-26)	16 (11-22)	13 (8.7-19)	11 (6.8-16)	9.1 (5.4-14)	7.9 (4.5-13)	7.2 (4.0-12)	6.7 (3.6-11)	6.2 (3.3-10)
3	43 (36-52)	34 (27-44)	27 (20-38)	22 (15-32)	18 (11-28)	15 (8.9-24)	13 (7.1-21)	11 (5.9-19)	10 (5.2-18)	9.3 (4.7-17)	8.7 (4.3-16)
4	54 (45-61)	44 (35-53)	36 (28-46)	29 (23-40)	24 (18-35)	20 (14-30)	17 (11-26)	15 (9.1-24)	14 (8.1-22)	13 (7.2-21)	12 (6.6-20)
5	64 (58-69)	54 (48-61)	45 (40-53)	38 (33-46)	32 (27-40)	27 (22-35)	23 (18-31)	20 (15-28)	18 (13-26)	17 (12-24)	16 (11-23)
6	72	64	55	47	40	34	30	26	24	22	21

Age = 70 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	19	15	11	9.1	7.4	6.0	5.0	4.3	3.9	3.6	3.3
1	26 (22-32)	21 (17-25)	16 (13-19)	13 (10-15)	10 (7.8-12)	8.4 (6.2-9.9)	6.9 (5.0-8.1)	6.0 (4.2-7.0)	5.3 (3.7-6.4)	4.8 (3.4-5.8)	4.4 (3.0-5.3)
2	36 (29-44)	29 (22-36)	23 (17-29)	18 (13-23)	14 (10-19)	12 (7.9-16)	9.5 (6.3-13)	8.2 (5.3-11)	7.3 (4.6-10)	6.6 (4.1-9.1)	6.0 (3.7-8.3)
3	47 (37-57)	38 (29-49)	31 (22-41)	25 (17-34)	20 (13-28)	16 (10-23)	13 (8.3-19)	11 (6.9-17)	9.8 (6.0-15)	8.8 (5.3-14)	8.0 (4.7-13)
4	58 (49-66)	49 (40-58)	41 (32-49)	33 (25-42)	27 (20-35)	22 (16-29)	18 (13-24)	15 (10-21)	13 (9.1-19)	12 (8.0-17)	11 (7.2-16)
5	68 (61-73)	60 (53-66)	51 (44-58)	43 (36-50)	35 (29-42)	29 (24-35)	23 (19-30)	20 (16-26)	17 (14-23)	15 (13-21)	14 (11-19)
6	76	69	62	53	45	37	31	26	23	20	18

Ten year probability of osteoporotic fractures (%) according to BMD, the number of clinical risk factors (CRF) and age in men from Japan.

Age = 75 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	20	16	13	11	8.6	7.0	5.8	5.1	4.6	4.1	3.7
1	29 (23-44)	24 (18-36)	19 (14-29)	15 (11-22)	12 (8.9-18)	9.9 (7.1-14)	8.1 (5.8-11)	7.0 (4.9-8.7)	6.1 (4.3-7.3)	5.4 (3.8-6.4)	4.9 (3.4-5.8)
2	40 (29-55)	33 (23-47)	27 (19-39)	22 (15-32)	18 (12-25)	14 (9.2-20)	11 (7.4-16)	9.7 (6.3-13)	8.3 (5.4-11)	7.3 (4.7-9.4)	6.4 (4.2-8.5)
3	52 (37-64)	44 (30-57)	37 (24-49)	30 (19-41)	25 (15-34)	20 (12-28)	16 (9.8-23)	13 (8.3-19)	11 (7.1-16)	9.8 (6.2-14)	8.5 (5.4-12)
4	63 (47-72)	56 (39-66)	48 (32-59)	41 (27-51)	34 (21-43)	28 (17-35)	22 (14-29)	19 (12-24)	16 (10-21)	13 (8.9-18)	11 (7.9-16)
5	72 (56-78)	66 (49-73)	60 (42-66)	52 (35-59)	45 (29-52)	37 (24-44)	30 (20-36)	25 (17-31)	21 (15-26)	18 (13-22)	15 (12-19)
6	80	75	70	63	56	48	40	34	29	24	20

Age = 80 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	21	17	14	12	9.8	8.2	6.9	6.1	5.5	4.9	4.4
1	29 (22-43)	24 (18-36)	20 (15-30)	17 (12-25)	14 (9.9-20)	11 (8.1-16)	9.6 (6.7-13)	8.4 (5.8-11)	7.4 (5.1-9.3)	6.5 (4.5-7.9)	5.8 (4.0-6.8)
2	38 (28-53)	33 (23-46)	28 (19-39)	23 (16-33)	19 (13-28)	16 (11-23)	13 (8.7-19)	11 (7.5-16)	10 (6.5-13)	8.7 (5.7-12)	7.7 (5.0-9.9)
3	49 (36-62)	43 (30-55)	37 (25-49)	31 (21-42)	26 (17-35)	22 (14-29)	18 (11-25)	16 (9.8-21)	13 (8.5-19)	12 (7.4-16)	10 (6.5-14)
4	59 (44-69)	53 (38-63)	47 (32-57)	41 (27-50)	35 (23-43)	29 (19-37)	25 (16-31)	21 (14-27)	18 (12-24)	16 (10-21)	14 (9.1-18)
5	69 (52-74)	63 (46-70)	57 (40-64)	51 (35-58)	45 (30-52)	39 (25-45)	33 (21-39)	28 (19-34)	24 (17-30)	21 (15-26)	18 (13-23)
6	76	72	67	62	55	49	42	37	32	28	24

Ten year probability of osteoporotic fractures (%) according to BMD, the number of clinical risk factors (CRF) and age in men from Japan.

Age = 85 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	17	15	12	10	8.6	7.2	6.2	5.5	4.9	4.3	3.8
1	24 (18-37)	21 (15-32)	18 (13-27)	15 (11-23)	12 (8.7-19)	10 (7.2-15)	8.8 (6.1-13)	7.7 (5.3-11)	6.8 (4.7-9.4)	5.9 (4.1-8.0)	5.2 (3.6-6.9)
2	33 (23-46)	29 (20-40)	24 (17-35)	21 (14-30)	17 (12-25)	15 (9.5-21)	12 (8.1-18)	11 (7.0-16)	9.4 (6.1-13)	8.2 (5.3-12)	7.2 (4.6-10)
3	43 (30-55)	38 (26-50)	33 (22-44)	28 (18-38)	24 (15-33)	20 (13-28)	17 (11-24)	15 (9.3-21)	13 (8.1-18)	11 (7.0-16)	9.9 (6.1-14)
4	53 (38-63)	48 (33-58)	43 (28-52)	37 (24-46)	32 (20-41)	28 (17-35)	24 (15-31)	21 (13-27)	18 (11-24)	16 (9.8-21)	14 (8.6-18)
5	63 (46-69)	58 (41-65)	53 (36-60)	47 (31-54)	42 (27-49)	37 (23-43)	32 (20-38)	28 (18-34)	25 (15-30)	21 (14-26)	19 (12-23)
6	71	67	63	58	52	47	42	37	33	29	25

Age = 90 years

Number of CRFs	BMD T-score (femoral neck)										
	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0	0.5	1.0
0	11	9.4	7.9	6.7	5.6	4.7	4.1	3.6	3.2	2.8	2.5
1	17 (12-28)	14 (10-24)	12 (8.6-20)	10 (7.2-17)	8.6 (6.0-15)	7.2 (5.0-12)	6.2 (4.3-11)	5.4 (3.8-9.1)	4.8 (3.3-7.9)	4.2 (2.9-6.8)	3.6 (2.5-5.8)
2	24 (16-36)	21 (14-32)	18 (11-28)	15 (9.7-24)	13 (8.1-20)	11 (6.8-17)	9.4 (5.9-15)	8.2 (5.1-13)	7.1 (4.5-11)	6.2 (3.9-9.7)	5.4 (3.4-8.4)
3	33 (21-45)	29 (18-40)	25 (15-36)	22 (13-31)	19 (11-27)	16 (9.3-23)	14 (8.1-20)	12 (7.0-18)	11 (6.1-16)	9.2 (5.3-14)	8.0 (4.6-12)
4	43 (27-53)	39 (24-49)	34 (20-44)	30 (17-39)	26 (15-35)	23 (13-30)	20 (11-27)	18 (9.6-23)	15 (8.4-21)	13 (7.3-18)	12 (6.4-16)
5	53 (35-60)	49 (31-56)	45 (27-51)	40 (23-46)	36 (20-42)	31 (17-37)	28 (15-33)	25 (13-30)	22 (12-26)	19 (10-23)	17 (8.9-20)
6	63	59	55	51	46	42	38	34	30	27	24