

Supplementary Material

Table S1. Combination of all risk assessments of 1,204 pigmented skin lesions by the smartphone app SkinVision®, 2D imaging FotoFinder ATBM®, 3D imaging Vectra® WB360, dermatologists and dermatologist in combination with knowledge of FotoFinder ATBM®, and Vectra® WB360 AI-scores.

Characteristic	N = 1,204 ¹
overall	
SkinVision®: benign FotoFinder ATBM®: benign Vectra® WB360: benign First Evaluation ² : benign Second Evaluation ³ : benign	936 (78%)
SkinVision®: benign FotoFinder ATBM®: benign Vectra® WB360: benign First Evaluation: suspicious Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: benign FotoFinder ATBM®: benign Vectra® WB360: suspicious First Evaluation: benign Second Evaluation: benign	14 (1.2%)
SkinVision®: benign FotoFinder ATBM®: suspicious Vectra® WB360: benign First Evaluation: benign Second Evaluation: benign	25 (2.1%)
SkinVision®: benign FotoFinder ATBM®: suspicious Vectra® WB360: suspicious First Evaluation: benign Second Evaluation: benign	2 (0.2%)
SkinVision®: benign FotoFinder ATBM®: suspicious Vectra® WB360: suspicious First Evaluation: benign Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: benign FotoFinder ATBM®: suspicious Vectra® WB360: suspicious First Evaluation: suspicious Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: suspicious FotoFinder ATBM®: benign Vectra® WB360: benign First Evaluation: benign Second Evaluation: benign	193 (16%)
SkinVision®: suspicious FotoFinder ATBM®: benign Vectra® WB360: benign First Evaluation: suspicious Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: suspicious FotoFinder ATBM®: benign Vectra® WB360: suspicious First Evaluation: benign Second Evaluation: benign	11 (0.9%)
SkinVision®: suspicious FotoFinder: benign Vectra® WB360: suspicious First Evaluation: suspicious Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: suspicious FotoFinder ATBM®: suspicious Vectra® WB360: benign First Evaluation: benign Second Evaluation: benign	7 (0.6%)
SkinVision®: suspicious FotoFinder ATBM®: suspicious Vectra® WB360: benign First Evaluation: benign Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: suspicious FotoFinder ATBM®: suspicious Vectra® WB360: benign First Evaluation: suspicious Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: suspicious FotoFinder: suspicious Vectra® WB360: suspicious First Evaluation: benign Second Evaluation: benign	4 (0.3%)
SkinVision®: suspicious FotoFinder ATBM®: suspicious Vectra® WB360: suspicious First Evaluation: benign Second Evaluation: suspicious	1 (<0.1%)
SkinVision®: suspicious FotoFinder ATBM®: suspicious Vectra® WB360: suspicious First Evaluation: suspicious Second Evaluation: suspicious	4 (0.3%)

¹n (%); ² First Evaluation = Dermatologist alone; ³ Second Evaluation = Dermatologist in combination with knowledge of 2D and 3D AI-scores

Table S2. Patients' preference for skin cancer screening and their assessment of the AI-based smartphone app SkinVision®, 2D imaging FotoFinder ATBM®, and 3D imaging Vectra® WB360 compared to dermatologists.

Characteristic	N	Patients with melanoma, N = 59 ¹	Patients at high-risk for melanoma, N = 55 ¹	p-value ²
A personal mole examination by the dermatologist makes me feel:	114			0.9
0 = not safe; 10 = very safe				
0		0 (0%)	0 (0%)	
1		0 (0%)	0 (0%)	
2		0 (0%)	0 (0%)	
3		0 (0%)	0 (0%)	
4		0 (0%)	0 (0%)	
5		0 (0%)	0 (0%)	
6		0 (0%)	0 (0%)	
7		3 (5.1%)	4 (7.3%)	
8		15 (25%)	11 (20%)	
9		10 (17%)	10 (18%)	
10		31 (53%)	30 (55%)	
A sole examination with the smartphone app makes me feel:	114			0.7
0 = not safe; 10 = very safe				
0		3 (5.1%)	3 (5.5%)	
1		3 (5.1%)	2 (3.6%)	
2		7 (12%)	7 (13%)	
3		6 (10%)	5 (9.1%)	
4		3 (5.1%)	6 (11%)	
5		8 (14%)	6 (11%)	
6		8 (14%)	7 (13%)	
7		4 (6.8%)	7 (13%)	
8		6 (10%)	3 (5.5%)	
9		4 (6.8%)	0 (0%)	
10		7 (12%)	9 (16%)	
Preference for mole assessment	114			0.6
Physician assessment		6 (10%)	5 (9.1%)	
2D imaging assessment		0 (0%)	0 (0%)	
3D imaging assessment		1 (1.7%)	3 (5.5%)	
Smartphone app assessment		0 (0%)	0 (0%)	
A combination of physician assessment and 2D imaging assessment		17 (29%)	10 (18%)	
A combination of physician assessment and 3D imaging assessment		30 (51%)	35 (64%)	
A combination of physician assessment and Smartphone App assessment		2 (3.4%)	1 (1.8%)	
I don't know		2 (3.4%)	1 (1.8%)	
No answer		1 (1.7%)	0 (0%)	

Characteristic	N	Patients with melanoma, N = 59 ¹	Patients at high-risk for melanoma, N = 55 ¹	p-value ²
The following examination has reduced my fear of developing skin cancer:	114			0.8
Smartphone app assessment				
Yes		19 (32%)	18 (33%)	
No		16 (27%)	11 (20%)	
I don't know		19 (32%)	19 (35%)	
No answer		5 (8.5%)	7 (13%)	
Dermatologist assessment	114			0.4
Yes		48 (81%)	49 (89%)	
No		6 (10%)	1 (1.8%)	
I don't know		3 (5.1%)	3 (5.5%)	
No answer		2 (3.4%)	2 (3.6%)	
2D TBP assessment	114			0.4
Yes		45 (76%)	43 (78%)	
No		5 (8.5%)	1 (1.8%)	
I don't know		6 (10%)	6 (11%)	
No answer		3 (5.1%)	5 (9.1%)	
3D TBP assessment	114			0.5
Yes		44 (75%)	45 (82%)	
No		5 (8.5%)	1 (1.8%)	
I don't know		7 (12%)	6 (11%)	
No answer		3 (5.1%)	3 (5.5%)	
The following examination has increased my fear of developing skin cancer:	114			>0.9
Smartphone app assessment				
Yes		0 (0%)	1 (1.8%)	
No		49 (83%)	44 (80%)	
I don't know		5 (8.5%)	5 (9.1%)	
No answer		5 (8.5%)	5 (9.1%)	
Dermatologist assessment	114			0.4
Yes		0 (0%)	0 (0%)	
No		58 (98%)	52 (95%)	
I don't know		1 (1.7%)	2 (3.6%)	
No answer		0 (0%)	1 (1.8%)	
2D TBP assessment	114			0.6
Yes		0 (0%)	0 (0%)	
No		55 (93%)	52 (95%)	
I don't know		3 (5.1%)	1 (1.8%)	
No answer		1 (1.7%)	2 (3.6%)	
3D TBP assessment	114			0.6
Yes		0 (0%)	0 (0%)	
No		55 (93%)	52 (95%)	
I don't know		3 (5.1%)	1 (1.8%)	
No answer		1 (1.7%)	2 (3.6%)	

Characteristic	N	Patients with melanoma, N = 59 ¹	Patients at high-risk for melanoma, N = 55 ¹	p-value ²
With the following examination I expect a reliable result with the highest level of accuracy:	114			0.2
Smartphone app assessment				
Yes		18 (31%)	9 (16%)	
No		14 (24%)	21 (38%)	
I don't know		26 (44%)	23 (42%)	
No answer		1 (1.7%)	2 (3.6%)	
Dermatologist assessment	114			0.058
Yes		54 (92%)	54 (98%)	
No		0 (0%)	1 (1.8%)	
I don't know		5 (8.5%)	0 (0%)	
No answer		0 (0%)	0 (0%)	
2D TBP assessment	114			0.5
Yes		51 (86%)	45 (82%)	
No		0 (0%)	2 (3.6%)	
I don't know		8 (14%)	8 (15%)	
No answer		0 (0%)	0 (0%)	
3D TBP assessment	114			0.7
Yes		52 (88%)	49 (89%)	
No		0 (0%)	1 (1.8%)	
I don't know		7 (12%)	5 (9.1%)	
No answer		0 (0%)	0 (0%)	
Preference for skin cancer screening if AI can distinguish very precisely between melanoma and harmless moles	114			0.5
If the physician is unsure, he includes the result of the artificial intelligence in his diagnosis.		16 (27%)	13 (24%)	
The diagnosis is made independently by the physician and artificial intelligence. A mole is always excised when either the physician or the artificial intelligence sees a need for it.		9 (15%)	6 (11%)	
The physician alone makes the diagnosis independently of the artificial intelligence.		0 (0%)	1 (1.8%)	
The physician always takes into account the result of the artificial intelligence in his diagnosis.		32 (54%)	35 (64%)	
No answer		2 (3.4%)	0 (0%)	

¹n (%); ²Fisher's exact test; Pearson's Chi-squared test; TBP = total body photography; AI = artificial intelligence

Table S3. Dermatologists' perspective of smartphone apps for melanoma screening.

Characteristic	N = 114 ¹ skin cancer screenings
Increased diagnostic confidence through the smartphone app	
Yes	6 (5.3%)
No	107 (94%)
No answer	1 (0.9%)
Trustworthiness of the smartphone app	
Yes	10 (8.8%)
No	103 (90%)
No answer	1 (0.9%)

¹n (%)

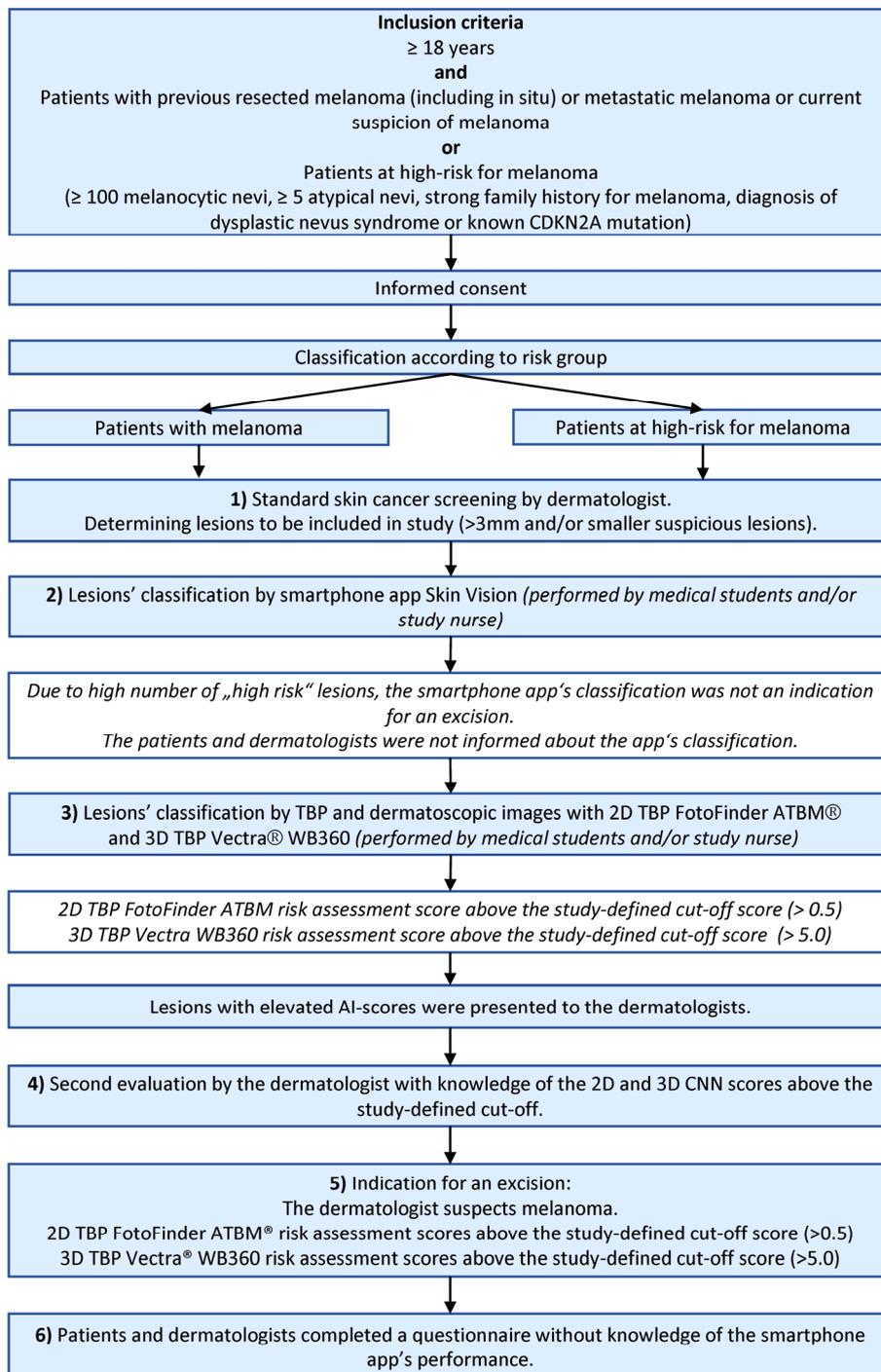


Figure S1. Flowchart of the study procedures. CNN = Convolutional neural network, TBP = Total body photography, AI = Artificial intelligence.