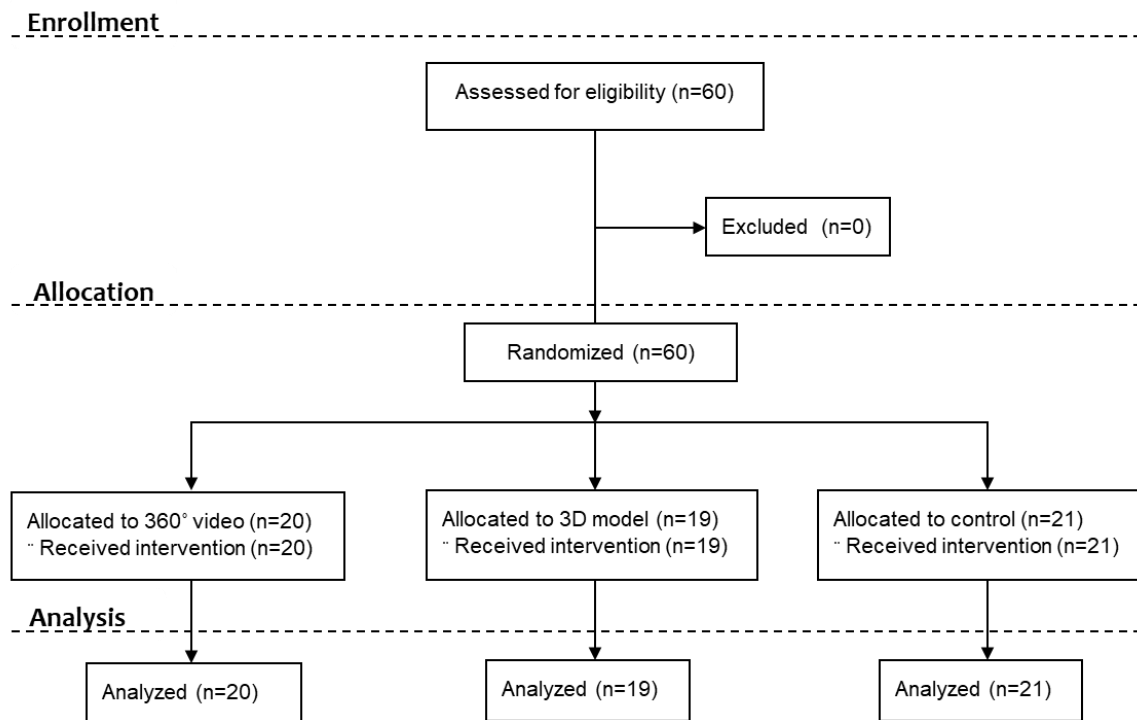


The health promoting potential of nature experiences in virtual reality

basic results summary

Participant Flow



Baseline Characteristics

Table 1.

Background characteristics of participants

	360° video (n=20)	3D model (n=19)	Control (n=21)
Males/females (n)	12/8	9/10	11/10
Age (years)	31.2 ± 13.7	31.6 ± 15.3	27.1 ± 7.3
BMI (kg/m ²)	24.8 ± 3.8	24.8 ± 4.0	25.0 ± 2.6
LTEQ	58.6 ± 22.9	54.9 ± 24.9	57.1 ± 28.3
CNS	3.9 ± 0.7	4.0 ± 0.7	4.0 ± 0.6

Outcome Measures (Primary outcome measure)

Table 2.

Affect across experimental conditions (n = 60)

Outcome variable	Descriptive statistics (M±SD)			ANOVA Time*condition interaction		
	Baseline	Pre-exposure	Post-exposure	F	ηp	p
Positive affect				2.376	0.018	0.102
360° video	3,42 ± 0,69	2,53 ± 0,44	3,42 ± 0,74			
3D model	3,68 ± 0,59	2,65 ± 0,68	3,88 ± 0,64			
Control	3,59 ± 0,61	2,76 ± 0,86	3,79 ± 0,58			
Tranquility				0.736	0.023	0.483
360° video	3,78 ± 0,63	3,10 ± 0,64	3,68 ± 0,79			
3D model	4,11 ± 0,65	3,25 ± 0,97	4,00 ± 0,48			
Control	3,91 ± 0,78	3,27 ± 0,95	3,56 ± 0,73			
Negative affect				1.399	0.017	0.255
360° video	1,68 ± 0,71	2,02 ± 0,86	1,67 ± 0,70			
3D model	1,46 ± 0,68	1,95 ± 0,86	1,28 ± 0,45			
Control	1,59 ± 0,71	1,97 ± 0,91	1,38 ± 0,61			
Fatigue				2.178	0.015	0.123
360° video	2,33 ± 0,89	2,17 ± 0,81	1,85 ± 0,75			
3D model	1,88 ± 0,72	1,84 ± 0,64	1,40 ± 0,54			
Control	2,40 ± 1,05	2,21 ± 0,99	1,68 ± 0,73			

Outcome Measures (Secondary outcome measures)

Table 2.

Blood pressure, future green exercise intention, and connectedness to nature across experimental conditions (n = 60)

Outcome variable	Descriptive statistics (M±SD)				ANOVA statistics		
	Baseline	Pre-exposure	Post-exposure	15 min post-exposure	Time*condition interaction		
					<i>F</i>	<i>ηp</i>	<i>p</i>
Systolic blood pressure					1.210	0.041	0.310
360° video	122,42 ± 10,60	120,63 ± 10,37	118,68 ± 9,41	116,16 ± 9,35			
3D model	124,74 ± 14,12	120,95 ± 13,77	121,74 ± 13,75	117,26 ± 13,27			
Control	119,05 ± 9,05	116,40 ± 10,06	119,50 ± 9,32	115,10 ± 7,05			
Diastolic blood pressure					0.374	0.013	0.895
360° video	73,00 ± 6,39	71,95 ± 6,89	74,32 ± 7,23	70,63 ± 9,52			
3D model	74,84 ± 10,29	75,21 ± 9,08	74,68 ± 12,78	73,00 ± 8,59			
Control	71,45 ± 8,56	71,55 ± 9,37	74,05 ± 6,18	71,15 ± 8,13			
Green exercise intention*					1.611	0.054	0.209
360° video	5.87±1.40		6.19±1.15				
3D model	5.81±1.55		6.05±1.39				
Control	6.20±1.03		6.31±1.04				
Connectedness to nature					10.688	0.273	<0.001
360° video	3.23±0.71 ^a		3.40±0.77 ^b				
3D model	3.38±0.55 ^a		3.65±0.48 ^b				
Control	3.23±0.62		3.11±0.68				

[a] Post-hoc analysis: significant difference (p<0.05) vs. post-exposure, applying Bonferroni's correction of alpha

[b] Post-hoc analysis: significant difference (p<0.05) vs. baseline, applying Bonferroni's correction of alpha

*GE-INT was analyzed using analysis of co-variance (ANCOVA) correcting for previous levels of physical activity (LEQT).

Table 2.

Indicators of the VR experience and physical engagement across experimental conditions (n = 60)

Outcome variable	Experimental conditions (M±SD)			ANOVA statistics (1-way)		
	360° video	3D model	Control	F	ηp	p
Enjoyment	6.85±2.37 ^a	8.26±1.88	5.86±2.63 ^c	5.357	0.158	0.007
Cyber sickness (SSQ total score)	25.15±15.58	21.06±15.02	16.21±14.74	1.801	0.059	0.174
Presence						
Being there	6.20±1.79	7.26±1.79				
Awareness	2.70±2.70	2.05±2.07				
Flatness	5.80±3.30	5.21±2.97				
Realism	4.15±2.28	4.53±2.34				
Other people	3.20±2.69	3.37±3.18				
Movement lag	4.05±3.25	3.53±2.61				
Noises	0.70±1.66	0.68±1.16				
Sense of reality	6.00±2.60	6.79±2.12				
Perceived environmental restorativeness						
Beingaway	6.30±2.10	7.45±1.61				
Fascination	5.70±1.39	6.67±1.94				
Coherence	1.66±1.42	1.51±1.28				
Compatability	5.78±1.65	6.63±1.59				
Intent to visit the location	6.20±2.69	7.32±2.03				
Walking speed (Km/h)	6.56±1.37 ^a	7.74±1.49	8.30±1.76 ^b	6.694	0.190	0.002
Mean heart rate (BPM)*	98.35±17.40	112.58±16.60	121.76±23.75	2.345	0.080	0.110
Perceived exertion*	9.90±3.02	11.21±2.20	10.48±2.54	1.284	0.040	0.285

[a] Post-hoc analysis: significant difference ($p < 0.05$) vs. control condition, applying Bonferroni's correction of alpha

[b] Post-hoc analysis: significant difference ($p < 0.05$) vs. 360° video condition, applying Bonferroni's correction of alpha

*Mean heart rate and Perceived exertion were analyzed using analysis of co-variance (ANCOVA) correcting for Walking speed.

Adverse Events

No life-threatening adverse events have occurred. In some cases, mild and temporary states of cybersickness have occurred.