

Appendix 1:

Appendix1-Table 1. Systematic search terms

Virtual Reality, its synonyms and types	"Virtual Reality" OR "Immersive environment" OR "Immersive visualization environment" OR "Virtual environment" OR "Walking simulator" OR "Mixed Reality" OR "VR simulation" OR "Immersive virtual environment" OR "Immersive virtual reality" OR "Head-mounted display" OR "HMD" OR "CAVE" OR "Gamification" OR "360° video" OR "360° environment" OR "Virtual reality exposure" OR "VR system"
Active mobility behaviour, its synonyms and types	"Active behaviour" OR "Active behavior" OR "Walking" OR "Cycling" OR "Bicycling" OR "Physical activity" OR "Pedestrian Behaviour" OR "Pedestrian behavior" OR "walking behaviour" OR "walking behaviors" OR "exercise behavior" OR "exercise behaviour" OR "leisure-time physical activity" OR "pedestrian"
Geographical environments, its synonyms and types	"Built environment" OR "Outdoor environment" OR "Pedestrian pathway" OR "Public places" OR "Urban space" OR "Sidewalk" OR "Neighbourhood" OR "Neighborhood" OR "Footpath" OR "City" OR "Cities" OR "Walkable environment" OR "Open space" OR "Physical environment" OR "Greenness" OR "Nature" OR "Urban environment" OR "Street environment" OR "Cycle route" OR "Cycle path" OR "Cycle trail" OR "cycle lane" OR "Biklane" OR "Bik path" OR "cycleway" OR "cycling infrastructure" OR "Walk trail" OR "Walk path" OR "Pedestrian trail" OR "Walkability" OR "Bikeability"
Exclusion criteria	"Automated vehicle" OR "Autonomous vehicle" OR "Autonomous driving" OR "Driving simulator" OR "Driving performance" OR "Assisted driving" OR "Indoor" OR "Indoor environment" OR "Shopping mall" OR "Military" OR "War" OR "Disease" OR "Rehabilitation" OR "Patient" OR "Injury" OR "Injuries" OR "Nutrient" OR "Education" OR "Training" OR "Gym" OR "Exit" OR "Therapy" OR "height" OR "fitness" OR "Evacuation" OR "Hospital"

Appendix1-Table 2. Data extraction headings

Heading	Data Extracted
General information	ID (DOI) Title of article Authors Publication year Sources of data (e.g. journal article, conference paper) The Country where the study was conducted
Population Characteristics	Population demographics and baseline characteristics: Gender Age range (adults +18) Experience with VR? Socio-economic status Ethnicity
Study design	Randomised or non-randomized Control group: within subject-comparison or between-subject Other study designs
Intervention group(s) and control group(s)	Number of withdrawals, exclusions, lost to follow-up and reasons
Session's characteristics	Number of sessions per experiment Session characteristics / Time of measurements (baseline, after, during) Length of exposure Duration of experiment /duration of the session
Active mobility measurements	Type of active mobility: walking or cycling Subcategory of walking or cycling (health, crossing, navigation, wayfinding) Purpose of walking (destination) Attributes of active mobility measuring Additional variables related to active mobility
Environment measurements	Nature or built environment Environmental attribute
VR measurements	Type of VR: CAVE or HMD Model Other technologies combined with VR Self-report or objective The level of interaction (natural interaction) of people with VR The degree of immersion/reality (sound, frame rate, resolution, degree of freedom, etc.) Length of exposure Properties of measure (reliability and validity where available)
Statistical analysis	Descriptive or inferential Univariate or multivariate Confounding factor
Results	Impacts of geographical environments associated with active mobility on people VR pros and cons VR sickness Other results Possible biases
Conclusion	Recommendation for future studies Limitations

Appendix1-Table 3. Checklist for assessing the quality of quantitative studies

Criteria		YES (2)	PARTIAL (1)	NO (0)	N/A
1	Question / objective sufficiently described?				
2	Study design evident and appropriate?				
3	Method of subject/comparison group selection or source of information/input variables described and appropriate?				
4	Subject (and comparison group, if applicable) characteristics sufficiently described?				
5	If interventional and random allocation was possible, was it described?				
6	If interventional and blinding of investigators was possible, was it reported?				
7	If interventional and blinding of subjects was possible, was it reported?				
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?				
9	Sample size appropriate?				
10	Analytic methods described/justified and appropriate?				
11	Some estimate of variance is reported for the main results?				
12	Controlled for confounding?				
13	Results reported in sufficient detail?				
14	Conclusions supported by the results?				

Appendix1-Table 4. Models of HMD or VR glasses and CAVE setups

HMD	CAVE
HTC Vive (1–3)	MVision 400 Cine 3D projectors (4)
HTC Vive Pro (5–8)	
HTC Vive Pro Eye (9)	
Oculus Rift (10–13)	
Samsung Gear VR (14)	
Samsung Odyssey (12)	
nVisor SX (15)	
VRLogic V82 (16)	
Fove HMD (17)	

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