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APPLICATION CYBERSICKNESS PUBLICATIONS

Author	***Duration in Minutes (Participants)***	***Design Aspect***	***Results***
(Freitag et al. 2016)	20-30(87)	Rotation Gain	Increasing the gain of rotation may increase cybersickness at large percentages
(Serge and Moss 2015)	16 (12)	Navigation	Viewing an environment with the joystick are higher if participants view a translation free virtual environment immediately prior
(Budhiraja 2015)	10 (10)	Blur	Adding motion blur may help cybersickness prone participants
(Plouzeau et al. 2015)	12-30 (18)	Navigation	Adding vibration to mimic walking decreases cybersickness
(Dorado and Figueroa 2014)	2 (44)	Navigation	Ramps have less cybersickness than stairs
(Llorach et al. 2014).	12 (55, 61)	Navigation	Walking navigation has less cybersickness than a traditional game pad
(Chen et al. 2013).	4-10 (20)	Navigation	Head/body controlled interfaces perform better and have lower cybersickness than joystick navigation given the same degree of freedom
(Chen *et al.* 2012)	30 (7)	Rotation	Scene oscillations are not correlated to nausea but are to vection
(Liu and Uang 2012)	5, 10, 15, or 20 (32)	Rotation	A gradual increase in cybersickness with increasing rotation speed, reaching significant between 15 and 60 degrees; no effect with an inclination about the lateral axis.
(Golding *et al.* 2012)	10 minutes with 15 minute breaks (12, 22)	Scene Orientation	Unlikely scenes (inverted) cause less cybersickness than likely scenes (upright)
(Chen and So 2011)	15 (32)	Navigation	No significant dominant axis of translation
(Chen *et al.* 2011)	50 (23)	Control	Drivers experience fewer symptoms than passengers with the same viewpoint

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(Dong *et al.* 2011)	40 (26)	Control	Drivers experience fewer symptoms than passengers with the same viewpoint
(Moss and Muth 2011)	12 (80)	Display	No peripheral vision increases symptoms
(Keshavarz and Hecht 2011)	15 (61)	Rotation	Pitch with roll and three axis rotation conditions produces more cybersickness than the pitch axis alone; the difference between two and three axes rotation did not reach significance.
(Ling *et al.* 2011)	5 (14)	Anxiety	Anxiety is correlated to cybersickness.
(Liu and Uang 2011)	Less than 10 (60)	Depth Cues	Higher depth cues increase cybersickness on monitors, and substantially less so on HMDs
(Dong and Stoffregen 2010)	40 (26)	Postural Detection and Control	Passenger sicker than drivers; drivers moved side-to-side more than passengers for head and torso; for-aft movement varied more for passengers than drivers
(Bonato *et al.* 2009)	5 (19)	Rotation	Rotating both the pitch and roll axes increases symptoms more than just one
(Watanabe and Ujike 2008)	10 (18)	Navigation and Physiological	Disorientation increases with vertical navigation; no significant effect on total SSQ; correlation with heart rate ratio and duration
(Diels *et al.* 2007)	10 (12)	Focus Point Effects	Higher in gaze shifting than focusing at the center and unrestricted viewing; higher in non center-fixation than in unrestricted viewing
(Merhi *et al.* 2007)	50 (24 or 9)	Posture Effects	Standing increases symptoms verbs sitting
(Clemes and Howarth 2005)	20 (48)	Menstrual cycle effect	Hormonal levels of the cycle do affect symptom severity
(Duh *et al.* 2004)	Not specified (11, 9, 10)	Rotation	Frequency negatively correlated with instability whether it be screen or screen/chair combination
(Stanney *et al.* 2002)	15, 30, 45, 60 (320 and 320)	Control and Scene Complexity	Higher level of control increases nausea symptoms; scene content did not significantly affect symptoms
(Duh *et al.* 2001b)	Not specified (9)	Independent Visual Background	Having a independent visual background improved stability; type of IVB showed no effect

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(Duh *et al.* 2001d)	Not specified (8)	Independent Visual Background	No effect with roll frequency; having a IVB improved stability Significant interaction with frequency and IVB
(Jaeger and Mourant 2001)	13-23 (60)	Navigation	Walking navigation had significantly less symptoms than mouse navigation;
(Kingdon *et al.* 2001)	15, 30, 45, or 60 (1028)	Symptom Profile	Users with emetic response had significantly higher disorientation, nausea and total ratings and lower sense of presence
(Lo and So 2001)	20 (16)	Rotation	Duration and rotation increases symptoms, rotation axis does not matter
(So *et al.* 2001a)	30 (36)	Navigation	Increase with scene velocity in for-aft and yaw directions
(So *et al.* 2001b)	30 (96, 12)	Navigation	Speed has a main effect but gets overshadows by duration eventually
(Nichols *et al.* 2000) (second experiment)	20 (20)	Symptom Profile	Negative correlation with improving the "interface" and all subscales and total SSQ categories; no correlation with enjoyment and symptoms
(Howarth and Finch 1999)	20 (14)	Navigation	Head tracking causes more nausea than hand controlled navigation
(Howarth 1999)	Not specified (31,37,40)	Interpupillary Distance	No statistically significant result
(So and Lo 1999)	20 (16)	Rotation	Nausea ratings increased for all axis; no difference between axis
(Singer *et al.* 1998)	Varied(32)	Duration of Effects	All mid, post higher than pre-experiment symptoms; only disorientation higher than pre-experiment after waiting period
(Stanney and Hash 1998)	30 (24)	Control	Active-passive SSQ-N was lower than the passive control; active-passive and active SSQ-O was lower than passive control; the active-passive SSQ-D was lower than passive control; active-passive and active SSQ total was lower than passive control
(Stanney and Kennedy 1998)	15, 30, or 45 (60)	Duration of Effects	All SSQ scores persistent for over an hour after exposure
(So and Lo 1998)	20 (16)	Rotation	Yaw rotation increases symptoms, no rotation has no symptom; HMD's do not have a claustrophobia effect

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(Dizio and Lackner 1997)	6, 2 min. each w/ 1 or 15 min. break, (21)	Field of View	Halving the FOV also halved the symptoms with a 200ms delay
(Prothero *et al.* 1997)	2, 3 min. each (15); 2, 4.5 min. each (21), both w/ 5 min. break	Independent Visual Background	First experiment's SSQ and stance breaks lower in see-through (IVB) condition; second experiment showed no difference for the condition on SSQ but did on stance breaks