Supplement Content 1

Select studies on the impacts of the physical environment on children

	PHYSICA	L HEALTH	BRA	AIN FUNCTION	EMOTIONAL PHYS	SICAL ACTIVITY	REFERENCE [number in article]	NOTES
	crine disruption function growth, ratory lhood	otoxicity ity r medical itions	or Ability / Fitness elopmental delays	itive function ntive capacity ng/Academic	rced stress yed onset tonin (<sleep) light="" pa<="" rral="" th="" use="" =""><th>erate PA</th><th></th><th></th></sleep)>	erate PA		
ENVIRONMENTAL ATTRIBUTE	Endo Lung respi Child leuke	Neur Obes Cond	Motc	Cogn Atter Testi	Redu Delay mela Gene	Mod		
Child care center or school attended					+		Finn, et. al. (2002); Pate, et. al. (2004) [5,6]	This could include any aspect of the child care environment (curriculum, staff, demographics, funding, physical environment) and these studies did not separate them.
Assessed overall quality of the child care setting	1111		i	i i	+	†	Dowda et.al. (2009) [34]	ECERS-R: space and furnishings, personal care routines, language-reasoning, activities, interaction, program, structure, and provisions for parents and staff
Perceived importance of the school physical environment		1 1 1		1 1		+	Fein et.al. (2004) [69]	The school environment was the only category that showed significant influence in energy expenditure
Food environment		+					Story, et. al. (2009); Wells (2007) [37, 9]	
Available transit, sidewaks, controlled intersections, traffic control					+]]	Boarnet (2005), in Davison, et.al. (2006) [39, 19]	
Sidewalk design (surfaces, etc)	<u>iii</u>		<u>j.</u>		+	<u>jj.</u>	Jago (2005) [40]	
Perceived safety from crime (street lighting, order, aesthetics, etc)	<u></u>				ļ.,, ļ., ļ.+.	<u> </u>	Day et. al. (2006), Davison et.al. (2006) [8,19]	
Proximity to freeways, or busy-road barrier	- +				ļļļ	<u>.ļ</u>	Simons et.al. (2008), Timperio (2006) in Davison et.al. (2006) [22, 38, 19]	
Proximity to recreational facilities	<u> </u>				<u>į </u>	.4	Davison et.al. (2006) [19]	
Proximity to parks or green spaces					+		Coombes (2010) [13]	
Distance from home to school	ļļļ						Timperio (2006) in Davison et.al. (2006) [38, 19]	
Type of land use pattern of residence (rural instead of suburban or urban)	ļ <u>ļ</u> ļ				+*	. 	Kyttä (2002) [42]	Related to independent mobility (freedom to roam around) and the amount of affordances children find in the environment (interpreted to be related to paretns fea
Daylight inside building				+	ļļ	·	Heschong (2003) [21]	
Views of greenery				+ + +	+		Collado et.al. (2015), Wells et.al. (2000 & 2003) [27, 28, 29]	
Higher number of TVs, computers, (sedentary equipment) Activity-permissive classrooms (stand-biased furniture)					+?		Bower (2008), Dowda et.al. (2009) [2, 34] Benden (2014), Contardo Ayala (2016) [54, 55]	Might have been a measure of financial resources
More use of electronic media	 				} <u>-</u>	· 	Senden (2014), Contardo Ayaia (2015) [54, 55] Dowda et.al. (2009) [34]	Bended found higher mean-step count and energy expenditure; while Contardo Ayala found less time sitting in long bouts, and more sit-to-stand transitions.
Lead in dust or water			+		 	· 	Zhang, et.al. (2003) [34]	
SVOCs, VOCs (paints, carpets, flooring, consumer products)	+ + +	+ ?				÷	;Dodson (2017), Halden (2014) [25, 26]	
PVC, phthalates, plasticizers (building materials, toys, medical devices)	?	·					Shea (2003) [23]	Cause for concern based on animal studies, not human. Varies by species.
Morning sunlight	·}				ł	+	Figueiro and Rea (2010) [20]	cause for concern dased on aminar scopes, not noman; varies by species:
Barriers (natural or constructed) to getting outside for PA)	 				-*	·		Described constructed environment as often designed to have barriers, no specific data
Indoor Play Space	 				+	. 4	Bower (2008), Battista (2014) [2, 45]	Described constructed environment as often designed to have barners, no specific data
More time Inside buildings	++				h		Coombes (2013) [41]	
More time outside (gardens, parks)	† <u>†</u>				į	+	Coombes (2013), Sallis (1993), Baranowski (1993), Klesges (1990) [41, 44, 14, 31]	
Access to playground after hours	† 				+		Wechsler, et.al. (2000) [47]	
Available Outdoor Playspace	111		<u>-</u>		+	† <u>†</u>	Bower (2008), Battista (2014), Sallis (1993) [2, 45, 44]	
Landscape features			····		i i i	1		
Shrubs / Trees			1	1 1		+ +	-Almanza (2011) [15]	
Topography / broken ground / stones					+?		Boldemann (2014), Märtensson et.al. (2013) [32, 16]	
Greenery combined with built elements near buildings					+		Märtensson et.al. (2013) [16]	Role of socialization, not direct influence for PA, but better gender inclusivity, social spaces
More portable equipment						+ +	Dowda et.al. (2009) [34]	Compared to other centers with less
Number of balls						+	Zask (2001) [46]	
Less fixed / permanent equipment						+	Dowda et.al. (2009), Davison et.al. (2006) [34, 19]	Compared to other centers with more
Larger playground size or Outdoor Learning Environment					+/-		Dowda et.al. (2009), Smith (2016) [34, 51]	Smith found negative association with size of total Outdoor Learning Environment, (attributed to longer distance between midpoints of adjacent settings). See next re
Larger observed zone within Outdoor Learning Environment					+		Smith (2016) [51]	Interpreted to be attributed to activities that can happen in play settings with more open area, based on child care settings (ages 3-5)
More variety of play settings					+		Smith (2016) [51]	Interprted to possibly be due to adjacency effect to other behavioral settings (play settings or areas), based on child care settings (ages 3-5)
Land Uses of Children Activities								
Buildings			<u>j</u>		+	<u> </u>	Coombes (2013) [41]	Higher percentage non-bout and light activity
Roads and paved areas	<u> </u>				+		Coombes (2013) [41]	Significantly greater percentage bout but light activity
Natural surfaces: gardens, parks and grassland	<u></u>		<u>l</u> l.	<u>i</u> i	<u> </u>	+ + +	Coombes (2013) [41]	Gardens showed the highest PA, parks and grassland saw higher percentage of VPA, but the number of minutes overall was small
Hard surface play areas					+?	<u> </u>	Coombes (2013) [41]	Short duration physical activity (Coombes). No effect, net other variables in Smith (2016)
Spaces designed for gathering	ļļļ				<u> </u>	<u> </u>	Smith (2016) [51]	Interpreted to be due to focus on social interaction
Forest	ļļļ		+		ļļ		Fjørtoft (2001) [43]	Study of affordances of natural landscapes compared to playgrounds, based on a kindergarten
Affordance, spactial centrality and adjacencies of play settings	ļļļļ				ļļļ	<u> </u>	Smith (2016) [51]	Early study based on behavior mapping in a number of childcare settings; does not identify mechanisms or reasons for difference yet
Markings on playgrounds / courts					ļļļ		Stratton and Mullan (2005) [52]	Based on interventions
Aesthetically pleasing, pleasurable					+*		Day et.al. (2006) [8]	Not all measurable
Safe or Perceived safe	ļļ				+*	. 4 4	Sallis et.al. (1997), Sallis et.al. (1998) [17, 10]	Based on survey, safety not define; indirectly associated Physical Activity, not measured. Perceived safety dependent on income.
Amenities (toilets, lighting)	<u> </u>				+*	. 4 4	Sallis et.al. (1997) [17]	i
Climate: temp/humidity, indicated by month or region (e.g. Northeast)					+/-?*	*	:Söderström (2004), Gordon-Larsen et.al. (2000), Finn et.al. (2002), Baranowski et.al. (1993), Smith (20	16] [48, 49, 5, 14, 51] Sensitive to time of day, also potential novelty effect in Fall, or aging effects. Not always explained, or observed, although instances were differenceswere more prono

Positive association

Negative association

Inconclusive, no effect, or contradicting results between studies, or reported potential methodological flaws that affected results

Indirect association with physical activity (e.g.eliminate barriers to use a space)