

Table S1 Data extraction of included studies

<i>Author Study</i>	<i>Study design</i>	<i>Participa</i> Nts	<i>INT 1</i> <i>INT 2</i> <i>INT 3</i> <i>CON</i>	<i>Purpose of the study</i>	<i>Setting</i>	<i>Intervention</i>	<i>Stimulus</i>	<i>Duration</i>	<i>Dose</i>	<i>Measurement Instrument</i>	<i>Duration</i>	<i>measurement periods for compensatio</i> <i>n</i>	<i>indicators for compensatio</i> <i>n</i>	<i>n</i>	
Abuerto et al.; 2011; Mexico	Cluster RCT	N = 699; 10.2 years; m = 339; f = 360	240	effects of a school based environmental intervention on PA	intervent ion	two additional PE classes/week		6 months	50min/day 2 times/week	Step counts	During school Out of school All day	p ≤ 0.05 ↑ during school overall PA ↔ supporting compensation	higher during school PA is compensated by less PA outside of school overall PA maintained stabled	INT1: during school ↑*(p≤ 0.05) out of school ↓ all day ↔	
						one additional recess (teacher promotion of PA)			15min/day 5 times/week	Pedometer					
										5 days					
						one additional PE class/week		242	50 min/day 1 time/week					INT 2: during school ↑ out of school ↔ all day ↑	
						one additional recess (teacher promotion of PA)			15min/day 5 times/week						
			n.g.												
			217							no change					CON: during school ↓ out of school ↑ all day ↓

[illegible]

n.g.													
15no intervention													
Alhassan et al.; 2012; USA	RCT	N = 71; 4.3 years; m = 35; f = 36	42	effects of classroom teacher taught LMS-based PA program on PA levels	intervention	teacher taught LMS based PA	6 months	30 min/day 5 times a week	MVPA	preschool time total day	p ≤ 0.05, ES: medium/small not supporting compensation	overall PA increased	INT 1:
									LPA				during Preschool SED ↓* (p≤ 0.02)
									Accelerometer				during Preschool LPA ↑
									7 days				during preschool MVPA ↑
													total day SED ↓* (p≤ 0.01)
													total day LPA ↑
													total day MVPA ↑
n.g.													
n.g.													
			28			no intervention							CON:
													during Preschool SED ↑
													during Preschool LPA ↓
													during preschool MVPA ↓
													total day SED ↑
													total day LPA ↑
													total day MVPA ↓

Alhassan et al.; 2013; USA	RCT	N = 67; 4.1 years; m = 38; f = 29	38	effects of increasing structured outdoor playtime on PA	intervention	structured outdoor playtime	4 weeks	30min/day 3 times a week	MVPA Accelerometer 5 days	total day preschool time after preschool	p ≤ 0.05 ↑ total day not supporting compensation	overall PA increased	INT 1: total day SED ↓* (p≤ 0.01) total day LPA ↑ total day MVPA ↑* (p ≤ 0.05)
													during school SED ↓* (p≤ 0.01) during school LPA ↑ during school MVPA ↑
													afterschool SED ↓ afterschool LPA ↑ afterschool MVPA ↑
			n.g.										
			n.g.										
			29			no intervention							CON: total day SED ↑ total day LPA ↑ total day MVPA ↑ during school SED ↑ during school LPA ↑ during school MVPA ↑ afterschool SED ↓ afterschool LPA ↑ afterschool MVPA ↑

Alhassan et al.; 2016; USA	RCT	N = 291; 4.1 years; ;	141	effects of short bouts of structured PA on preschoolers PA levels	intervention	short bouts structured PA	6 months	2x10min/day 5 days	TPA Accelerometer 5 days	intervention time total day	p ≤ 0.05 ↓ LPA, ↑ MVPA total day ↔ supporting compensation	overall PA maintained stable higher MVPA is compensated by less LPA	ES (MVPA): d= 0.24	INT: MVPA ↑* (p < 0.001) LPA ↑* (p < 0.001) total day PA ↔
													ES (LPA): d= 0.15	
													ES (SED): d= 0.21 ==> small	
			n.g.											
			n.g.											
			150			no intervention							CON: MVPA ↓ LPA ↑ SED ↓ total day PA ↔	
Alhassan et al.; 2018; USA	RCT	N = 32 (all f); 8.3 years	14	efficacy of a mother-daughter intervention in girls PA level	intervention	CH-M: afterschool dance intervention with mother	12 weeks	60min/day 3 times a week	VPA MVPA Accelerometer 7 days	intervention time total afterschool time total day	total day ↔ supporting compensation	overall MVPA maintained stable	INT 1: total day SED ↑ total day LPA ↓ total day MVPA ↔	
													afterschool SED ↔	
													afterschool LPA ↓ afterschool MVPA ↑	
			12			CH: afterschool dance intervention without mother					total day p > 0.05 supporting compensation	overall PA maintained stable PA did not significant change	INT 2: total day SED ↑ total day LPA ↓ total day MVPA ↑	
													afterschool SED ↑ afterschool LPA ↑	

									afterschool MVPA ↑
		n.g.							
		6	no intervention					CON: total day SED ↓ total day LPA ↑ total day MVPA ↑ afterschool SED ↓ afterschool LPA ↑ afterschool MVPA ↔	
Aljuhani et al.; 2019; Saudi-Arabien	Cross Sectional Study	N = 111 (all m); 13.6 years	contribution of PE to daily PA by comparing daily levels on days with and without PE	Physical Education	MVPA Accelerometer 7 days	Day no PE PE day+ PE day-	p ≤ 0.05 not supporting compensation	higher PA on PE day than on non-PE day	MVPA PE+ >* non PE-day PE+ > PE- PE- = non PE-day

Baggett et al.; 2010; USA
Trial of Activity for Adolescent Girls (TAAG)

Cross
Sectional Study

N = 6916
(all f); 14.0 years;

evidence of compensation in middle school girlsrelations between inactivity, LPA, MVPA and total PA

daily PA pattern

inactivityLPA
MVPA
total PA
Accelerometer
6 days

n.i.

$p \leq 0.05$ not supporting compensation

Higher inactivity is associated with lower PA levelsHigher MVPA is associated with higher PA levels

Associations*
($p < 0.01$) within a day and between two following days
↑ inactivity: ↓ LPA
↓ MVPA
↓ total PA
↑ MVPA: ↑ LPA
↑ MVPA
↓ inactivity

Bin Tan et al.; 2019; Singapore

Cross
Sectional Study

N = 5600;
7-18 years

effect of morning commuting on overall walking activity

active commuting to school

step counts

Pedometer

6 days

total day morning commuting

$p > 0.05$ before and after school
total day steps
Public transport = WALK = CAR
supporting compensation

differences in steps before school and after school are compensated at other times

steps before school
Public Transport > CAR
WALK > CAR

steps total day
Public Transport = WALK = CAR

steps after school
Public transport > CAR
WALK > CAR

Bringolf-Isler et al.; 2009; Switzerland	Cross Sectional Study	N = 169; 6-14 years; m = 81; f = 88	activity type and quantification of intensity and duration of children's everyday PA	daily PA pattern	MPA VPA MVPA Total PA	screen reaction time quit activity public transport recess moderate intense play walking vigorous intense play PE class sport training	p ≤ 0.05 ↑ high intensity sports, ↓ VPA supporting compensation	high intensity sports are compensated by being less vigorous active and more sedentary	Adolescents ↑* high intensity sports (p≤ 0.001) ↓* playing vigorous (p≤ 0.04) ↑* SED (p≤ 0.001) ↓* CPM (p≤ 0.007)		
					Accelerometer	7 days					
Brockmann et al.; 2010; UK	Cross Sectional Study	N = 747; 10-11 years; m = 341; f = 406	contribution of active play to children's PA	Active play	MVPA counts per minute	Weekday after school Weekend	p ≤ 0.05 not supporting compensation	more active play leads to higher PA levels and CPM	Weekday girls MVPA/day ↑* (p≤ 0.01) MVPA/afterschool ↑* (p≤ 0.04) CPM/day ↑* (p≤ 0.01) CPM/afterschool ↑* (p≤ 0.02)	Weekend girls MVPA/day ↑ CPM/day ↑	Whole week girls MVPA/day ↑* (p≤ 0.02) CPM/day ↑* (p≤ 0.01)
					Accelerometer	5 days			Weekday boys MVPA/day ↑ MVPA/afterschool ↑ CPM/day ↑* (p≤ 0.01) CPM/afterschool ↑* (p≤ 0.01)		
Brusseau et al.; 2011; USA	Cross Sectional Study	N = 363; 9.7 years; m = 160; f = 203	PA on PE days and non PE days	Physical Education	Step counts	PE day non PE day Weekend day All day	p ≤ 0.05 not supporting compensation	overall PA on PE day is higher than on non PE day	PA PE day > non PE day (p<0.01)		
					Pedometer	7 days					

Carlson et al.; 2017; USA	Teen Environment and Neighborhood (TEAN) study	Cross Sectional Study	N = 528; 14.12 years; m = 264; f = 264	Association between PA in different locations	PA across locations	MVPA Accelerometer	7 days	home home neighborhood school neighborhood other	partial compensation $p \leq 0.05$ \uparrow PA at school, \downarrow PA at other locations supporting compensation	higher at school PA is compensated by less PA at other locations	Associations across location \uparrow Home neighborhood --> at home \uparrow^* ($p \leq 0.001$) Generalization \uparrow home neighborhood --> school environment \leftrightarrow \uparrow home neighborhood --> other locations \uparrow at school --> home neighborhood \downarrow Compensation \uparrow at school --> school environment \uparrow \uparrow at school --> other locations \downarrow^* ($p \leq 0.006$) Compensation \uparrow at home --> school environment \downarrow \uparrow other locations -> school neighborhood \leftrightarrow \uparrow other locations -> at home \leftrightarrow
Cheung et al.; 2019; Hong Kong		Cross Sectional Study	N = 242; 8.7 years; m = 131; f = 111	associations between school based PA lessons and afterschool hours	PE and afterschool sports classes	MVPA Accelerometer	4 days	afterschool hours school hours	$p \leq 0.05$ not supporting compensation	overall PA is on PE day and Afterschool Sports Program higher than on non active day	N-Act day $<^*$ PE = ASP ($p \leq 0.00$)

Coombes et al.; 2016; UK	quasi experimental design	N = 80; 8-10 years	51	impact on active travel to school intervention on increasing active travel	intervention	Beat the Street Challenge	9 weeks	MVPA	total day morning commute afterschool commute evening weekend day	p ≤ 0.05 supporting compensation	higher CPM during active commuting is compensated by less CPM during the evening	CPM/MVPA morning commute WALK >* CAR (p≤ 0.001)	
								Accelerometer				CPM/MVPA afternoon commute WALK >* CAR (p≤ 0.03)	
								7 days				CPM/MVPA evening WALK <* CAR (p≤ 0.004)	
n.g.													
n.g.													
29													
						no intervention							
Cooper et al.; 2003; UK	Cross Sectional Study	N = 114; 10.4 years; m = 59; f = 55		Comparison of PA patterns of children who walked with those who were driven to school	active commuting to school			MVPA		total MVPA Walk = CAR supporting compensation in girls	overall PA is similiar in girls girls compensated for higher PA during 8-9am with lower PA levels at other times	afterschool MVPA WALK >* CAR (p≤ 0.017) only boys during evening	
								Accelerometer	total day 8-9 am Weekend				MVPA WALK >* CAR (p≤ 0.017) only boys
								7 days				p≤ 0.05 not supporting compensation in boys	overall PA is higher in boys who walk compared to boys who were driven
												total MVPA boys WALK > CAR -- > no compensation	
												total MVPA girls WALK = CAR -- > compensation	

Ford et al.; 2007; UK	Cross Sectional Study	N = 239; 8.1 years; m = 125; f = 114	Comparison of daily activity levels in school children who walk with those who travel by car to and from school	active commuting to school	Counts per minute Accelerometer 5 days	weekday in school out of school to and from school commuting time	CPM Walk = CAR supporting compensation	higher to and from school CPM is compensated at other times overall CPM are similar between WALK and CAR	Weekday WALK = CAR In school WALK < CAR out of school WALK < CAR to and from school WALK >* CAR (p≤ 0.000)
Fremeaux et al.; 2011; UK Early Bird 46 – Study	longitudinal study	N = 206; 9 years; m = 115; f = 91	effects of different amounts of PA in school on total PA level	Physical Education	total PA MVPA Accelerometer 7 days	in school out of school	TPA S1 = S2 = S3 supporting compensation	overall PA is similar between the three schools higher PE amounts are compensated	TPA S1 = S2 = S3 TPA in school S1 >* S2 = S3 (p<0.001) TPA out of school S1 < S2 = S3 MVPA S1 = S2 = S3 MVPA in school S1 >* S2 = S3 (p<0.001) MVPA out of school S1 < S2 = S3
Frömel et al.; 2012; Poland	Cross Sectional Study	N = 497 (all f); 17.9 years	differences in PA and inactivity structure in girls who do not participate in any organized PA and girls who regularly participate in PE or training lessons	organized sports participation	steps per day LPA MPA VPA Accelerometer 7 days	School Transport Leisure Home total	p ≤ 0.05 not supporting compensation	higher sports club participation is associated with higher overall PA	girls with highest Participation ↑* steps/day (p = 0.000) ↑* MPA (p = 0.000) ↑* VPA (p = 0.000) ↑* leisure PA (p = 0.000)

Gao et al.; 2015; China	Cross Sectional Study	N = 68; 10.45 years; m = 28; f = 40	Characterization of children's PA level during a segmented school day	daily PA pattern	Steps per day	total day before school	p ≤ 0.05 not supporting compensation	High active children are more active in every segment than low active children	Boys in recess (high active) HA >* (low active) LA (p≤ 0.05)	Girls in recess HA >* LA (p≤ 0.007)
					Pedometer	first-fifth session			in lunch break HA > LA	in lunch break HA < LA
					4 days	first-third recess			in PE class HA > LA	in PE class HA > LA
						lunch break after school			before school HA >* LA (p≤ 0.05)	before school HA > LA
								after school HA >* LA (p≤ 0.05)	after school HA >* LA (p≤ 0.001)	
Gidlow et al.; 2008; UK CHAMPS - Study	Cross Sectional Study	N = 503; 10.4 years; m = 250; f = 253	Comparison of in and out PA	daily PA pattern	Counts per minute	in school out of school school (before and after school weekday)	p ≤ 0.05 supporting compensation	higher in school CPM are compensated by lower out of school CPM	in school >* out of school (p≤ 0.001)	
					Accelerometer	School related PA before, during or immediately after school				
						After school (after 16h)				
						7 days				Weekend periods

Grasten et al.; 2015; Finland	longitudinal study	N = 76; 11.43 years; m = 36; f = 40	Effects of Civil Skill Program on children's LPA patterns	intervention	psychological and physical school environment	2 years	LPA Accelerometer 7 days	Weekend before school After school PE classes Long breaks Short breaks	ES: medium, total LPA ↔ supporting compensation	overall LPA maintained stable LPA is rearranged	boys: total LPA ↔ before school LPA ↓ after school LPA ↔ short break LPA ↔ class time LPA ↑ long break LPA ↓ weekend LPA ↓ girls: total LPA ↔ before school LPA ↓ after school LPA ↑ short break LPA ↔ class time LPA ↑ long break LPA ↔ weekend LPA ↓
Grasten et al.; 2015b; Finland	longitudinal study	N = 76; 11.43 years; m = 36; f = 40	Effects of Civil Skill Program on children's MPA patterns	intervention	psychological and physical school environment	2 years	MVPA Accelerometer 7 days	Weekend before school After school PE classes Long breaks Short breaks	ES: small, total MVPA ↔ supporting compensation	overall MVPA maintained stable MVPA is rearranged	boys:total MVPA ↔before school MVPA ↓after school MVPA ↑short break MVPA ↓class time MVPA ↑long break MVPA ↓weekend MVPA ↑girls:total MVPA ↔before school MVPA ↓after school MVPA ↑short break MVPA ↓class time MVPA ↔long break MVPA ↓weekend MVPA ↓

Groffik et al.; 2020; Poland/Czechia	Cross Sectional Study	N = 921; 16.2 years; m = 324; f = 597		Comparison of two differences education systems of children's PA level	Physical Education			Step counts Pedometer 7 days	school time out of school total day	total daily steps CZ = PL, supporting compensation	overall steps are similar in CZ and PL higher PE amounts are compensated	total daily steps CZ = PL
Goodman et al.; 2011; UK	Cross Sectional Study	N = 345; 8-13 years; m = 161; f = 184		compensatory effects of different behaviors	daily PA pattern			MVPA Accelerometer 4 days	Weekend/week day Own/friend's other home School lesson PE 2School Breaks Non home events Clubs Passive travel School/non school active travel Structured sport Out of home play other	↑ inactivity at home, ↑ MVPA during rest of the day small partial supporting compensation p ≤ 0.05 ↑ PE, ↑ MVPA not supporting compensation	higher inactivity at home is compensated by more MVPA during the rest of the day	↑time at home --> ↓ MVPA (p≤ 0.05) ↑ time in school -> ↓ MVPA (p≤ 0.05) ↑ PE/games, school breaks, active travel, structured sports --> ↑ MVPA (p≤ 0.05) ↑at home on weekends --> ↑ MVPA during rest of the day (only partial compensation)
Haapala et al.; 2017; Finland	quasi experimental design Move Program	N = 185; 9.3 years	4 school	effects of Move program on children's PA levels	intervention	Move program to make school days more active	2 years	MVPA SED Accelerometer 7 days	school day outside school hours total day	p ≤ 0.05 ↑ school MVPA, ↓leisure, ES: small supporting compensation	overall PA maintained stable higher school day PA is compensated by less leisure time PA	School day MVPA ↑* (p = 0.01) School day SED ↓* (P = 0.008) Leisure time MVPA ↓ (p < 0.001) whole day MVPA or ST ↔
n.g.												

n.g.											
2 schools											
Hardman et al.; 2009; UK	Cross sectional Study	N = 95; 9.9 years; m = 38; f = 57	Comparison of pedometer steps during school and leisure time	PA during school and Leisure time			step counts Pedometer 6 days	school time leisure time weekday weekend	p ≤ 0.05 not supporting compensation		high and mid active leisure time steps >* school time steps (p < 0.001) low active leisure time steps = school time steps school activity HA >* LA (p < 0.001) HA >* MD (p < 0.001) MD > LA
Harrington et al.; 2008; UK	RCT	N = 1211; 12.8 years	Effects of Girls Active program	intervention	Girls Active Program (framework for school PE)	13 months	LPA MVPA SED Accelerometer 7 days	school hours out of school hours	p ≤ 0.05 not supporting compensation at 7 months LPA, MVPA, SED ↔ supporting compensation at 14 months	7 months: overall PA increased 14 months: overall PA maintained stable (compared to baseline)	7 months: total PA ↑* (p= 0.03) SED during after school ↓* (p= 0.026) total LPA ↑* (p= 0.018) LPA on school day ↑* (p= 0.038) 14 months: no differences at any time of the day

Herman et al.; 2014; Canada	Quebec Adipose and Lifestyle Investigation in Youth (QUALITY) - Study	Cross Sectional Study	N = 532; 9.6 years; m = 286; f = 246	associations between PA intensities	daily PA pattern	LPA VPA MVPA SED Accelerometer	n.i.	p ≤ 0.05 not supporting compensation	higher PA is associated with higher overall PA and less SED	higher MVPA --> ↓* SED (p < 0.001) higher MVPA --> ↑* TPA (p < 0.001) higher VPA --> ↓* SED (p < 0.001) higher VPA --> ↑* TPA (p < 0.001) higher LPA --> ↓* SED (p < 0.001)
Jago et al.; 2014; UK	Action 3:30 - Study	Cross Sectional Study	N = 469; 10.05 years; m = 201; f = 268	differences in PA in those who travelled to school actively compared (A) with those who travelled passively (P)	intervention	Counts per minute MVPA Accelerometer	total day afterschool hours	p ≤ 0.05 not supporting compensation in girls weekday and afterschool MVPA A = P supporting compensation in boys	active travel girls had higher PA levels than passiv travel girls active travel boys had similar PA levels than passive travel boys	Travel to school boys Weekday MVPA A = P afterschool MVPA A = P Travel from school boys Weekday MVPA A = P afterschool MVPA A = P Travel to school girls Weekday MVPA A >* P (p = 0.004) afterschool MVPA A > P Travel from school girls Weekday MVPA A > P afterschool MVPA A > P

$$AT = AT + MT = MT$$

Kidokoro et al.; 2019; Japan	quasi experimental design	N = 38; 11.3 years; m = 22; f = 16	18	effects of standing desks on children's PA level	intervention	individual height adjustable standing desks	6 months	LPA MVPA SED	every hour	$p \leq 0.05$, ES: large not supporting compensation	INT increased overall PA	INT group SB ↓* ($p < 0.082$) LPA ↔ MVPA ↑* ($p < 0.005$)
								Accelerometer				5 days

Kippe et al.; 2018; Norway	Cross Sectional Study	N = 244; 4-6 years; m = 125; f = 119	children's Pa level at kindergarten related to leisure time	daily PA pattern	MVPA Accelerometer 7 days	preschool time leisure time	$p \leq 0.05$ not supporting compensation	higher PA in kindergarten is associated with higher PA levels in leisure time	PA in kindergarten >* PA in leisure time ($p < 0.05$) ↑ PA in Kindergarten --> ↑ PA in leisure time
Kobel et al.; 2017; Germany Join the Healthy Boat – Study	Cross Sectional Study	N = 294; 7.1 years; m = 141; f = 153	effects of PE on children's PA levels	Physical Education	MVPA Accelerometer 6 days	PE day non PE day	$p \leq 0.05$ not supporting compensation	overall PA is higher on PE days than on non-PE days	MVPA PE days >* no PE day ($p \leq 0.01$) PE day - PA during PE > non PE day
Koorts et al.; 2019; Australia NEighbourhood Activity in Youth (NEArbY) – Study	Cross Sectional Study	N = 358; 15.3 years; m = 146; f = 212	Contribution of sports participation to overall PA	organized sports participation	MVPA Accelerometer 8 days	n.i.	$p \leq 0.05$ not supporting compensation	higher frequency of sports participation is associated with higher PA levels	↑ number and frequency of sports participation --> ↑* MVPA ($p=0.004$)

Long et al.; 2013; USA NHANES - Study	Cross Sectional Study	N = 2548; 9.5 years; m = 1266; f = 1282		effects of higher school day PA on overall PA	daily PA pattern			VPA MVPA Accelerometer 7 days	before school school time after school evening	p ≤ 0.05 not supporting compensation	higher school day PA is associated with higher overall PA	1 additional min of school day MVPA --> 1.14min of total day MVPA* (p < 0.001)
												1 additional min of school day VPA --> 1.15min of total day VPA* (p < 0.001)
												higher school day MVPA --> ↑ total daily MVPA
Loucaides et al.; 2009; Cyprus	RCT	N = 247; 11.1 years	89	effects of interventions on children's PA	intervention	play space for team games, playground markings and long ropes	2 months	Step counts Pedometer 4 days	20min break after school	p ≤ 0.05, ES: small not supporting compensation	INT increased mean overall steps	INT 1: 4 weeks after intervention mean steps ↑* (p < 0.001; p < 0.01)
												afterschool activity ↑
												INT 2: 4 weeks after intervention mean steps ↑* (p < 0.001; p < 0.01)
			89			play spaces for team games	2 months				INT increased mean overall steps	afterschool activity ↑
			n.g.									
			69			no intervention						

Magnusson et al.; 2011; Iceland	Cluster RCT	N = 196; 7.3 years; m = 87; f = 109	100	changes in volume and intensity of PA	intervention	school based PA intervention (engage children to be more physically active during school)	2 years	counts per minute MVPA	in school out of school	p ≤ 0.05 not supporting compensation during first year of intervention	first year: higher PA levels in INT compared to CON	after 1 year during school hours PA INT >* CON (p < 0.0001)
								Accelerometer		INT = CON supporting compensation at the end of the intervention		end of intervention during school hours PA INT = CON
								7 days				after 1 year after school hours PA INT > CON
n.g.												
n.g.												
			96	no intervention								
Mallam et al.; 2003; UK	Cross Sectional Study	N = 159; 9.0 years; m = 85; f = 74	impact of timetabled PE on overall PA		Physical Education							
						units/week	total day in school after school	p ≤ 0.05 ↓ out of school, ↑ in school TPA S1 = S2 = S3 supporting compensation	overall PA is similar between the three schools higher PE amounts are compensated	TPA S1 = S2 = S3		
						Accelerometer		TPA in school S1 >* S2 = S3 (p > 0.001)				
						7 days					TPA out of school S1 <* S2 = S3 (p > 0.001)	

<p>Møller et al.; 2014; Denmark</p> <p>The CHAMPS - Study DK</p>	<p>quasi experimental design</p>	<p>N = 2130; 9,9 years</p>	<p>Effects of sport school on children PA level in different domains</p>	<p>intervention</p>	<p>increased mandatory PE lessons from 2 to 6 lessons per week</p>	<p>1 year</p>	<p>at least 4,5h PE/week</p>	<p>MVPA SED Accelerometer 7 days</p>	<p>school time leisure time</p>	<p>p ≤ 0.05 ↑ school time PA in sport schools, ↓ leisure time PA in sports schools total PA sport schools = normal schools supporting compensation</p>	<p>higher school time PA in sports schools is compensated by less leisure time PA in sports school overall PA is similar between sports and normal schools</p>	<p>school time PA boys in sport schools >* boys in normal schools (p < 0.001) girls in sport schools > girls in normal schools</p> <p>leisure time MVPA boys in sport schools <* boys in normal schools (p < 0.001) girls in sport schools <* girls in normal schools (p < 0.004)</p> <p>leisure time SED boys in sport schools > boys in normal schools girls in sport schools > girls in normal schools</p> <p>total PA, PE, recess children in sport schools = children in normal schools</p>
<p>Mosses et al.; 2019; Estonia</p>	<p>Cross Sectional Study</p>	<p>N = 492; 9.3 years; m = 226; f = 266</p>	<p>contributing role of organized sport participation to daily MVPA</p>	<p>organized sports participation</p>				<p>MVPA Accelerometer 7 days</p>	<p>during training outside of training</p>	<p>p ≤ 0.05 not supporting compensation</p>	<p>overall PA is higher on training day than non training day more training PA is associated with increased overall PA</p>	<p>1 additional min of training MVPA --> 1.3 min increase in daily MVPA</p> <p>MVPA training day >* non training day -(p< 0.05)</p>

Morgan et al.; 2007; USA	Cross Sectional Study	N = 485; 6-11 years; m = 205; f = 280	contribution of PE to daily PA by comparing daily levels on days with and without PE	Physical Education	step counts				steps/day high active group PE day >* non PE day (p < 0.001)
					Pedometer	PE day non-PE day	p ≤ 0.05 not supporting compensation	overall PA is higher on PE day compared to non-PE day	steps/day moderate active group PE day >* non PE day (p < 0.001)
					2 weeks				steps/day low active group PE day >* non PE day (p < 0.001)

Pelklova et al.; 2010; Czechia	longitudinal study	N = 13; 15.2 years; m = 2; f = 11	pedometer-determined PA over one school year for two groups: children who engage regular in afterschool PA and those who were not engaged in regular afterschool PA	organized after school sports participation	i	step counts Pedometer 1 year	weekday with PEweekday without PEweekend	$p \leq 0.05$ not supporting compensation	higher overall PA in children who partake in afterschool PA	steps/dayweekdays with PE ASPA >* non ASPA ($p < 0.0001$)steps/day weekdays without PE ASPA >* non ASPA ($p < 0.0001$)steps/day weekend ASPA >* non ASPA ($p < 0.0001$)
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Ribeyre et al.; 2000; France	Cross Sectional Study	N = 50; 17.0 years; m = 27; f = 23	day to day variations in daily EE of athletic and non athletic adolescents	Daily EE Pattern	EE HR monitor 7 days	total day sleep school work meals Exercise miscellaneous activity	p ≤ 0.05 ↑ EE during exercise, ↓ EE during school and miscellaneous work supporting compensation	athletes compensated for higher EE during exercise with lower EE during school work and miscellaneous work	EE during school work athletes <* non athletes (p < 0.01) EE during exercise athletes >* non athletes (p < 0.001) EE during miscellaneous work athletes <* non athletes (p < 0.001)
Ridgers et al.; 2014; Australia	Cross Sectional Study	N = 248; 10.0 years; m = 121; f = 127	Associations between PA levels on one day with PA levels on the following day	daily PA pattern	LPA MVPA SED Accelerometer 7 days	given day following day	p ≤ 0.05 ↑ PA on day 1, ↓ PA on day 2 supporting compensation	higher PA on one day is compensated by less PA on the other day	MVPA(D1) ---> MVPA(D2) ↓* (p < 0.001) LPA (D1) --> LPA(D2) ↓* (p < 0.001) SED (D1) --> SED(D2) ↓* (p < 0.014) LPA (D1) --> MVPA(D2) ↓* (p < 0.001) MVPA (D1) --> LPA(D2) ↓* (p < 0.001)

Ridgers et al.; 2015; Australia

Patterns of Habitual Activity across Seasons (PHASE) - Study

Cross Sectional Study

N = 235; 10.1 years; m = 125; f = 110

correlations between primary school children's sitting, standing and stepping time within and between days

PA within and between days

sitting time
standing time
stepping time

Accelerometer

8 days

before school
at school
after school

$p \leq 0.05$ ↑ PA on day 1, ↓ PA on day 2 supporting compensation

higher PA on one day (D1) is compensated by less PA on the other day (D2)

Weekday	Weekend day
Step(D1) -->	Step(D1) -->
Step(D2) ↓* (p < 0.001)	Step(D2) ↓* (p < 0.001)
Step(D1) -->	Step(D1) -->
Stand(D2) ↓* (p < 0.001)	Stand(D2) ↓* (p < 0.001)
Step(D1) -->	Step(D1) -->
Sit(D2) ↑	Sit(D2) ↑* (p > 0.001)
Sit(D1) -->	Sit(D1) -->
Sit(D2) ↓* (p < 0.001)	Sit(D2) ↓* (p < 0.001)
Sit(D1) -->	Sit(D1) -->
Stand(D2) ↑* (p = 0.004)	Stand(D2) ↑* (p < 0.001)
Sit(D1) -->	Sit(D1) -->
Step(D2) ↑* (p < 0.001)	Step(D2) ↑* (p < 0.001)
Stand(D1) -->	Stand(D1) -->
Stand (D2) ↓* (p < 0.001)	Stand (D2) ↓* (p < 0.001)
Stand(D1) -->	Stand(D1) -->
Step (D2) ↑	Step (D2) ↓* (p < 0.001)
Stand(D1) -->	Stand(D1) -->
Sit(D2) ↑* (p < 0.001)	Sit(D2) ↑* (p < 0.001)

Ridgers et al.; 2017; Australia

Fitness, Activity and Skills Testing (FAST) - Study

Cross Sectional Study

ACC: N = 127; 10.45 years; m = 64, f = 63

SW: N = 98; 10.45 years; m = 48, f = 50

Association between Pa levels and EE on one day with these behaviors on the following day

daily PA pattern

LPA
MVPA
EE

Accelerometer
SenseWear
Armband

8 days

given day following day

$p \leq 0.05$ ↑ PA on day 1, ↓ PA on day 2 supporting compensation

higher PA on one day (D1) is compensated by less PA on the other day (D2)

MVPA(D1) --->
MVPA(D2) ↓* (p < 0.001)
LPA (D1) -->
LPA(D2) ↓* (p < 0.001)
LPA (D1) -->
MVPA(D2)↓* (p < 0.001)
MVPA (D1) -->
LPA(D2)↓* (p < 0.001)
EE(D1) -->
EE(D2) ↓* (p < 0.001)

Ridgers et al.; 2017b; Australia	randomized but not controlled Study	ACC: N = 156; 11.3 years; m = 72, f = 84 SW: N = 145; 11.3 years; m = 71, f = 74	Exploring the ActivityStat hypothesis by investigating children's short term response to imposed or restricted PA	intervention	1. additional MVPA (sport session delivered during morning class - 120min session) 2. additional LPA (standing lesson - 120min) 3. restricted LPA and MVPA	1 week	LPA MVPA SED Accelerometer SenseWear Armband 5 days	experimental day after experimental day	p ≤ 0.05 not supporting compensation	higher PA on one day is associated with no changes in PA on the next day (compared to usual PA on that day)	Increased MVPA (Sport Club Session) ↑*SED on day after Exp. (p< 0.05) ↓*MVPA on day after Exp.(p< 0.05) ↓* CPM on day after Exp.(p< 0.05) But: no differences with usual PA on that day	Increased LPA (Standing lesson Session) no differences with usual PA on that day	Restricted MVPA and LPA (Indoor play) ↓*SED on day after Exp. (p< 0.05) ↑*MVPA on day after Exp. (p< 0.05) ↑*CPM on day after Exp. (p< 0.05) ↑*LPA on day after Exp. (p< 0.05) But: no differences with usual PA on that day ↑*EE on day after Exp.
Rooney et al.; 2018; UK	Cross Sectional Study	N = 61; 9.3 years; m = 24; f = 37	influence of PE and recess on overall PA	Physical Education			MVPA Accelerometer 4 days	PE day non-PE day PE Recess Lunch	PE day = non PE day supporting compensation	overall PA is similar on PE day and non PE day	PA on PE day = PA on non PE day		

Schneller et al.; 2017b; Denmark	quasi experimental design	N = 663; 10.8 years	Effect of Education outside the Classroom (EOtC) on PA levels in different domains	intervention	EOtC	1 year	300min weekly	LPA MVPA Accelerometer 7 days	school day with EOtC school day without EOtC	p ≤ 0.05 not supporting compensation	higher overall PA levels on days with EOtC compared to a day without EOtC	boys: LPA school day with EOtC >* school day without EOtC and PE (p< 0.001) school day with EOtC >* school day with PE (p < 0.001) school day with EOtC >* weekend day (p < 0.001)
												girls: LPA school day with EOtC >* school day without EOtC and PE (p< 0.001) school day with EOtC >* school day with PE (p < 0.001) school day with EOtC >* weekend day (p < 0.001)

Sigmund et al.; 2014; Czechia	Cross Sectional Study	N = 338; 9.91 years; m = 168; f = 170	Changes in PA levels between the day with participation in PE and without PE	Physical Education	LPA MVPA SED Accelerometer 7 days	Before school in school after school all day	p ≤ 0.05, ES: medium not supporting compensation	higher overall PA levels on day with PE compared to non PE day	<p>school MVPA PEL >* without PEL (p < 0.005)</p> <p>daily MVPA PEL >* without PEL (p girls < 0.05), (p boys < 0.005)</p> <p>school LPA PEL >* without PEL (p girls < 0.005), (p boys < 0.01)</p> <p>daily SED PEL <* without PEL (p girls < 0.05), (p boys < 0.01)</p>
Smith et al.; 2012; UK SPEEDY - Study	longitudinal study	N = 812; 9-10 years; m = 333; f = 479	Association between change in mode of travel to school and change in PA	ACS	MVPA Accelerometer 7 days	total day weekday	p ≤ 0.05 not supporting compensation	higher overall PA in children who changed from passive to active travel	<p>boys: change in total daily MVPA active to passive ↓ passive to active ↑* (p= 0.03)</p> <p>girls: change in total daily MVPA active to passive ↓ passive to active ↑* (p< 0.01)</p>

Stewart et al.; 2017; New Zealand

Built Environment and Adolescent New Zealanders (BEANZ) – Study

Cross sectional study

N = 186; 14.07 years; m = 110; f = 76

Relationship between school travel mode and physical activity within various space-time domains

ACS

counts per minute MVPA Accelerometer 7 days

total day home school transport leisure

$p \leq 0.05$ not supporting compensation

higher overall PA in children with active transport (AT)
higher transport PA is associated with higher leisure time PA

no active transport (noT)

Day MVPA AT >* noT (p < 0.001)

Day SED AT < noT

Home MVPA AT = noT

Home SED AT = noT

School MVPA AT = noT

School SED AT = noT

Transport MVPA AT >* noT (p < 0.001)

Transport SED AT <* noT (p < 0.001)

Leisure MVPA AT >* noT (p < 0.039)

Leisure SED AT <* noT (p < 0.016)

n.g.												
568no intervention												
Toftager et al.; 2014; Denmark SPACE - Study	Cluster RCT	N = 797; 12.5 years; m = 402; f = 395	376	Effectivness of the intervention in reducing decline in PA	intervention	physiological changes and organizational environment	2 years	MVPA total PA Accelerometer 7 days	total day weekday weekend school time recess	overall PA ↔ supporting compensation	overall PA mainated stable	INT: overall PA ↔ MVPA ↓ school PA ↓ Recess PA ↓ SED ↑
n.g.												
n.g.												
421no intervention												CON: overall PA ↓ MVPA ↓ school PA ↓ Recess PA ↓ SED ↑

Trapp et al.; 2013; Australia	Cross sectional Study	N = 884; 11.0 years; m = 384; f = 500	Extent of travel mode to school was associated with PA	ACS		step counts	weekend weekday leisure time	p ≤ 0.05 not supporting compensation	higher overall PA in children who walk compared to children who travelled with car	steps on weekday WALK >* CAR (p < 0.001)	after adjusting for demographic factors Steps WALK >* CAR (p < 0.000)
						Pedometer 7 days				Participation in leisure activities WALK >* CAR (p < 0.05 for girls; p < 0.001 for boys)	Participation in leisure activities WALK >* CAR (p < 0.043) for girls WALK = CAR
Tudor Locke et al.; 2006; USA	Cross sectional study	N = 81; 11.8 years; m = 28; f = 53	Differences in step counts on PE and non PE day in different domains	Physical Education		step counts	Total day Before school After School Lunchtime Recess PE After school Residual	PE day = non PE day supporting compensation in girls	overall PA levels on day with PE and without PE similar in girls	boys: steps PE day >* non PE day (p < 0.05)	girls steps PE day = non PE day
						Pedometer 4 days		p ≤ 0.05 not supporting compensation in boys			

Vale et al.; 2011; Portugal	Preschool Physical Activity, Body Composition and Lifestyle - Study (PRESTYLE)	Cross sectional Study	N = 193; 4.8 years; m = 97; f = 96	Differences in PA during daily school hours when they attend PE classes compared with school days without PE classes	Physical Education	total PA MVPA Accelerometer	PE day non PE day	p ≤ 0.05 not supporting compensation	overall PA levels higher on days with PE compared to non-PE day	TPA PE day >* non PE day (p < 0.05) MVPA PE day >* non PE-day (p < 0.05)
						5 days				

Van Cauwenbergh et al.; 2013; Belgium	Cross Sectional Study	N = 200; 5.3 years; m = 87; f = 113	Comparison of PA levels on days with Teacher led structured PA session with days without these sessions	teacher led structured PA session	LPA MVPA LMVPA SED Accelerometer	Preschool time after preschool	p ≤ 0.05 not supporting compensation	higher PA during school day on PE day similar afterschool PA levels on day with and without PE higher overall PA levels on day with PE	Preschool time SED PE day >* without (PE p < 0.001) LPA PE day >* without PE (p < 0.001) MVPA PE day >* without PE (p < 0.001)	After Preschool time SED PE day = without LPA PE day = without MVPA PE day = without
					4 days					

Wilson et al.; 2017; Australia	Cross over design	N = 51 (all m); 12.4 years	impact of 10min active lesson breaks on PA on other day segments and across the whole day	intervention	active school lesson breaks	1 week	40min/day 3 times a week	MPA VPA MVPA	total day school hours ALB afterschool	p ≤ 0.05 ↑ in school MVPA, ↓ afterschool MVPA daily MVPA INT = CON supporting compensation	higher inschool PA is compensated in less out of school PA overall PA levels similar between INT and CON	daily MVPA INT = CON			
								Accelerometer				daily VPA INT >* CON (p=0.006)			
												daily MPA INT < CON			
												inschool MVPA INT >* CON (p<0.0001)			
															7 days

(n.g. = not given in the study)

Abbreviation List

- CON Control group
- CPM Counts per minute
- EE Energy Expenditure
- ES Effect Size
- INT Intervention group
- LPA Light physical activity
- MVPA Moderate-to-vigorous physical activity
- PA Physical activity
- PE Physical Education
- RCT Randomized controlled trial
- SED Sedentary behavior

ST	Screen time
TPA	Total physical activity
VPA	Vigorous physical activity