

Table 3 – Part 1

Overview of included studies among children and adolescents,

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; SAMPLE SIZE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES		PREVALENCE OF PA DURING THE COVID19 PANDEMIC	CHANGES IN PA			QUALITY ASSESSMENT SCORE (MAX. SUM SCORE = 10)	
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS		PA DECREASED	NO CHANGE	PA INCREASED		
CHILDREN AND ADOLESCENTS											
Hommel et al., 2021 (20)	Primary school children: 10 (8-13); Secondary school children: 15 (13-18); N=385; Berlin	CS (retrospective data); 11th-19th June 2020	Questionnaire	Sport inside and outside	Time spent in sports					4/10	
					Primary school children						Decrease
					Secondary school children						No change
Koletzko et al., 2021 (26)	Children up to the age of 14; N= 1000 parents; nationwide representative sample	CS (retrospective data); 11th -16th September 2020	Online questionnaire	Reduction of PA	all children (0-14 years)	38,0%				3/10	
					children aged 0-2 years	12,0%					
					children aged 3-5 years	28,0%					
					children aged 6-9 years	41,0%					
					children aged 10-12 years	50,0%					
children aged 13-14 years	57,0%										
Marckhoff et al., 2022 (33)	Secondary school children (11-17 years); 14, 2 (2,0); N= 1038; Münster	CS (retrospective data); 22th April - 10 May 2020	online questionnaire	PA for at least 60min	Days per week	3,3	4,5 → 3,3			8/10	
				WHO guideline compliance	Percentage of children fulfilling the guideline	15,6%	17,7% → 15,6%				
				Inactive people	Percentage of children fulfilling the guideline not at all	12,7%	1,9% → 12,7%				
MoMo Study; Schmidt et al., 2020; Schmidt et al., 2021a; Schmidt et al., 2021b; Wunsch et al., 2021 (46, 47, 48, 58)	Children and adolescents: 4-17; N=1615; Germany (nationwide representative sample)	LS; Pre-pandemic: 2018-2020; during pandemic: April - May 2020	Online questionnaire	WHO guideline compliance	Percentage of children fulfilling the guideline					10/10 5/10 10/10 8/10	
					Preschool children (4-5 years)	51,3%		30,6% → 51,3%			
					Primary school children (6-10 years)	42,5%		25,3% → 42,5%			
					Younger adolescents (11-13 years)	22,6%		10,1% → 22,6%			
					Adolescents (14-17 years)	12,4%		5,8% → 12,4%			
					Children and adolescents (4-17 years)	31,5%		19,5% → 31,5%			
					Level of PA	Minutes per day of organized sports	0	26,3 →			
						Minutes per day of unorganized sports	23,9		6,2 → 23,0		
					WHO guideline compliance	Minutes per day playing outside	81,7		50,1 → 81,7		
						days per week with at least 60 mins of PA					
children (4-10 years)	5,3		4,7 → 5,3								
Adolescents (11-17 years)	4,0		3,7 → 4,0								

Table 3 – Part 2

Overview of included studies among children and adolescents,

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; SAMPLE SIZE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES		PREVALENCE OF PA DURING THE COVID19 PANDEMIC	CHANGES IN PA			QUALITY ASSESSMENT SCORE (MAX, SUM SCORE = 10)
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS		PA DECREASED	NO CHANGE	PA INCREASED	
CHILDREN AND ADOLESCENTS										
MoMo Study; Schmidt et al, 2021a (47)	Children and adolescents: 4-17; N=1438; Germany (nationwide representative sample)	LS; Pre-pandemic: 2018-2020; during pandemic: January/February 2021	Online questionnaire	WHO guideline compliance	Percentage of children fulfilling the guideline					5/10
					Preschool children (4-5 years)	26,7%	30,6% → 26,7%			
					Primary school children (6-10 years)	23,8%	25,3% → 23,8%			
					Younger adolescents (11-13 years)	11,0%		10,1% → 11,0%		
					Adolescents (14-17 years)	7,4%		5,8% → 7,4%		
					Children and adolescents (4-17 years)	16,2%	19,5% → 16,2%			
				Level of PA	Minutes per day of organized sports	3,7	26,3 → 3,7			
					Minutes per day of unorganized sports	9,9		6,2 → 9,9		
					Overall minutes per day of sports	13,6	32,5 → 13,6			
					Minutes per day playing outside	22,4	59,1 → 22,4			
SPATZ Study; Kurz et al., 2022 (29)	First-grade school children: 6-7 years; N= 362; Ulm	LS; Pre-Pandemic: 2018/2019; during Pandemic: March-May 2020	Questionnaire	General PA	Items answered with 'physical active' outweighing items answered with 'physical inactive'; Score from -7 to + 7	1,9			1,4 → 1,9	7/10
				Physical inactive	Percentage of participants being physical inactive	41,4%			46,7% → 41,4%	

Table 4 – Part 1

Overview of included studies among young adults,

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; SAMPLE SIZE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES		PREVALENCE OF PA DURING THE COVID19 PANDEMIC	CHANGES IN PA		QUALITY ASSESSMENT SCORE (MAX, SUM SCORE = 10)		
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS		PA DECREASED	NO CHANGE		PA INCREASED	
YOUNG ADULTS (17-31 YEARS OLD)											
C19 ISWS; Busse et al., 2021 (8)	Students: 24,4 (5,1); N=5021; Siegen, Bremen, Düsseldorf, Berlin	CS (retrospective data); May 2020	Online questionnaire	MPA for at least 30 min	Percentage of young adults engaging in MPA for at least 30min				56,0% → 58,0%	8/10	
					None	10,1%	9,3% → 10,1%				
					Once a week	31,9%	34,7 → 31,9%				
					More than once a week	58,0%					
					VPA for at least 30 min	Percentage of young adults engaging in VPA for at least 30min					
						None	21,7%	13,3% → 21,7%			
Once a week	33,4%	35,8% → 33,4%									
More than once a week	44,9%	50,9% → 44,9%									
Giessing, Kannen, Strahler, & Frenkel, 2021 (16)	Sport students: 23,0 (2,9); N=366; Baden-Wuerttemberg	CS (retrospective data); 17th-24th April 2020	Online questionnaire	Types of sports	Percentage of sport students engaging in different types of activities				33,6% → 54,5%	21,0% → 28,3%	8,6% → 13,8%
					Aerobic	54,5%					
					Ballsports	28,3%					
					Gymnastics	13,8%					
					Weight training	0,1%	0,6% → 0,1%				
					Combat sports	2,5%	26,6% → 2,5%				
					Rehabilitation sports	0,3%	5,7% → 0,3%				
					Climbing/bouldering	0,1%					
Exercise activity	Minutes per week	201,8 (231,7)	255,7 → 201,8								
Helbach & Stahlmann, 2021 (19)	Young adults: 22,4 (2,0); N=884; Germany	CS (retrospective data); August-September 2020	Online questionnaire	PA for at least 30min	Days per week	3,6	3,8 → 3,7			9/10	
					WHO guideline compliance	Percentage of adults fulfilling the guideline	36,8%	37,4% → 36,8%			
Huber et al., 2020 (22)	Students: 23,3; N=1980; Bavaria	CS (retrospective data); 22nd-24th March 2020	Online questionnaire + step count data from smartphones	Time engaging in PA	Percentage of students engaging in PA					3/10	
					2-5h	39,7%	>50% → 39,7%				
					>5h	24,0%					
Steps per day	Average numbers of steps per day	4829,0	6777,0 → 4829,0								
							20,2% → 24,0%				

Table 4 – Part 2

Overview of included studies among young adults,

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES		PREVALENCE OF PA DURING THE COVID19 PANDEMIC	CHANGES IN PA			QUALITY ASSESSMENT SCORE (MAX. SUM SCORE = 10)	
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS		PA DECREASED	NO CHANGE	PA INCREASED		
YOUNG ADULTS (17-31 YEARS OLD)											
Palmer et al., 2021 (40)	Students: ≥ 18; N=827; Stuttgart	CS (retrospective data); 12th March - 3rd May 2020	Online questionnaire	General PA	Percentage of students		46,9%		37,0%	7/10	
				Exercise activity	Percentage of students decreasing exercise		44,2%		27,2%		
Pietsch et al., 2021 (42)	Students: Female: 22,6 (19-31); Male: 23,3 (18-29); N=223; Germany (representative sample)	CS (retrospective data); 2nd-18th February 2021	Online questionnaire	PA intensity	Percentage of adults engaging in different PA intensities					8/10	
					Low	23,3%			17,5% → 23,3%		
					Moderate	25,6%			20,6% → 25,6%		
				Types of sport	High	51,1%	61,9% → 51,2%				
					Percentage of sport students engaging in different types of sports						
					Jogging	57,4%					40,4% → 57,4%
					Biking	41,3%	63,2% → 41,3%				
					Swimming	2,7%	40,4% → 2,7%				
					Ballsports	4,0%	49,8% → 4,0%				
					Athletics	3,1%	9,9% → 3,1%				
					Gymnastics	2,2%	15,2% → 2,2%				
					Dancing	10,3%	20,2% → 10,3%				
					Racket sports	4,5%	20,6% → 4,5%				
					Strength training on their own	52,5%					47,1% → 52,5%
					Strength training with digital media	67,7%					13,5% → 67,7%
Strength training within a sports club	8,5%	44,4% → 8,5%									
Winter sport	15,2%	53,4% → 15,2%									
Hiking	43,5%	51,6% → 43,5%									
Climbing	9,9%	28,7% → 9,9%									
Yoga	39,5%	17,5% → 39,5%									
Martial arts	1,8%	9,89% → 1,8%									

Table 5 – Part 1

Overview of included studies among adults

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; SAMPLE SIZE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES			CHANGES IN PA			QUALITY ASSESSMENT SCORE (MAX, SUM SCORE = 10)
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS	PREVALENCE OF PA DURING THE COVID19 PANDEMIC	PA DECREASED	NO CHANGE	PA INCREASED	
ADULTS										
AugUR cohort study; Brandl et al., 2022 (5)	Older adults (73-98 years); 78,8; N=1850; Regensburg	CS (retrospective data): 13th May - 12th June 2020	Online questionnaire	General PA	percentages of participants reporting PA level during pandemic compared to pre pandemic		25,8%	72,1%	2,1%	7/10
AugUR cohort study; Brandl et al., 2022 (5)	Older adults (73-98 years); 78,8; N=1734; Regensburg	LS; pre-pandemic: April 2016 - 16th March 2020; during pandemic: 12th May - 12th June 2020	Pre-pandemic: face-to-face interview; during pandemic: online questionnaire	Light regular activities (bicycling, gardening, walking)	weekly for > 2 hours	81,1%			78,4% → 81,1%	7/10
Brailovskaia et al., 2022 (3)	Adults (18-71): 27,7 (6,9); N= 406; Ruhr Region	CS (retrospective data): March 2021	Online questionnaire	General PA	mean value of Likert Scale (1= totally disagree; 7= totally agree) related to consciously enhancing PA compared to the time before Covid19 outbreak	3,2				8/10
Cosmo; Maertl et al., 2021 (32)	Adults; 45,8 (15,7); N=979; Germany (nationwide representative sample)	CS (comparison with nationwide pre-pandemic data from the GEDA study 2014/2015 (Finger et al., 2017)); 14th-15th April 2020	Online questionnaire	WHO guideline compliance	Percentage of adults fulfilling the guideline	32,1%			29,4% → 32,1%	9/10
				Muscle-Strengthening activities ≥ 2 times a week	Percentages of adults engaging in muscle-strengthening ≥ 2 times a week activities	42,6%	45,3% → 42,6%			
Füzéki, Schröder, Groneberg, & Banzer, 2021 (12)	Adults; 44,0 (14,7); N=979; Germany	CS (retrospective data); 23rd April-12th September 2020	Online questionnaire	Walking	Minutes per week	195,4	218,4 → 195,4			6/10
				Cycling	Minutes per week	63,8	78,1 → 63,8			
				Leisure time activity	Minutes per week	189,7	225,7 → 189,7			
				WHO guideline compliance	Percentage of adults fulfilling the guideline	30,4%	38,1% → 30,4%			
Füzéki, Schröder, Reer, Groneberg, & Banzer, 2021 (13)	Adults; 45,8; N=993; Germany	CS (retrospective data); 8th April-2nd July 2021	Online questionnaire	Walking	Minutes per week	181,0	216,6 → 181,0			7/10
				Cycling	Minutes per week	64,0	85,3 → 64,0			
				Leisure time activity	Minutes per week	185,5	238,2 → 185,5			
				WHO guideline compliance	Percentage of adults fulfilling the guideline	29,4%	42,2% → 29,4%			
Koopmann et al., 2021 (27)	Adults: 18-80; N= 3259; Germany	CS (retrospective data); 8th April - 11th May 2020	Online questionnaire	General PA	percentage of adults reporting PA levels during pandemic compared to pre pandemic		38,3%	27,8%	31,2%	4/10
Krist et al., 2021 (28)	Adults of Turkish descent; 53,9 (11,8); N=106; Berlin	LS; pre-pandemic: May 2018-July 2019; during pandemic: July-December 2020	Questionnaire	Types of PA	Percentage of people reporting decline					8/10
					PA at work		28,3%			
					PA at home		8,1%			
					Leisure time PA		43,1%			
					Sport		55,7%			
Active Transport		42,3%								

Table 5 – Part 2

Overview of included studies among adults

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; SAMPLE SIZE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES			CHANGES IN PA			QUALITY ASSESSMENT SCORE (MAX, SUM SCORE = 10)		
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS	PREVALENCE OF PA DURING THE COVID19 PANDEMIC	PA DECREASED	NO CHANGE	PA INCREASED			
ADULTS												
Mannheim Corona Study; Mata et al., 2021 (34)	Adults: 16-75; N=5449 (March 2020)/ N=3,516 (April 2020)/ N=3409 (May 2020)/N=3334 (June 2020); Mannheim	LS; pre-pandemic: March 2020; during pandemic: April, May, June 2020	Questionnaire	WHO guideline compliance	Percentage of adults fulfilling the guideline					9/10		
					Apr 20	57,9%	65,3% → 57,9%					
					May 2020	69,2%		65,3% → 69,2%				
				June 2020	76,1%			65,3% → 76,1%				
Mojtahedzadeh et al., 2021 (35)	Outpatient caregivers: ≥ 18; N=171; Northern Germany	CS (retrospective data); May 2020 - February 2021	Online questionnaire	Quantity of PA	mean value of change (less often (-2)/less often (-1)/the same (0)/more often (+1)/much more often (+2) than before the COVID-19 pandemic)	-0,4				8/10		
Schlichtiger et al., 2021 (45)	Older adults: 66 (10,0); N= 110; Bavaria	CS (retrospective data); March and April 2020	Online questionnaire	Types of PA	MET-hours/week					7/10		
					overall PA	144,1	168,8 → 144,1					
					household	50,5	52,5 → 50,5					
					yard work	16,4		14,5 → 16,4				
					leisure activities	16,4	20,0 → 16,4					
					sports	27,6	40,6 → 27,6					
				work/volunteering	33,1	41,6 → 33,1						
Sonza et al., 2021 (51)	Adults: 30,4 (10,7); N= 143; Germany	CS (retrospective data); 21st April - 10th May	Online questionnaire	Level of Physical Exercise	Percentage of participants reporting					5/10		
					sedentary	8,4%	2,8% → 8,4%					
					a bit active	32,9%		14,7% → 32,9%				
					active	48,2%	52,4% → 48,2%					
				very active	10,5%	30,1% → 10,5%						
				Physical Exercise Practice	Percentage of participants reporting							
					yes	93,0%	95,8% → 93,0%					
					no	7,0%	4,2% → 7%					
				Frequency of Physical Exercise	Percentage of participants exercising ...							
					1 time/week	5,2%		3,6% → 5,2%				
					2-3 times/week	35,8%		30,5% → 35,8%				
					4-5 times/week	36,6%	44,9% → 36,6%					
								6-7 times/week	22,4%			21,0% → 22,4%
				Duration of Physical Exercise	Percentage of participants exercising ...							
0-30 min	15,1%		3,7% → 15,1%									
31-60 min	31,1%		17,6% → 31,1%									
				> 60 min	53,8%	78,7% → 53,8%						
Type of Physical Exercise	Percentages of participants eengaging in ...											
	Aerobic	70,1%		51,1% → 70,1%								
	Resistance	3,8%		2,9% → 3,8%								
	Strengthening	9,7%	12,4% → 9,7%									
				Other/CM	16,4%	33,6% → 16,4%						

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Overview of included studies among adults

STUDY TITLE, AUTHOR(S), YEAR; (REFERENCE)	AGE OF SAMPLE; SAMPLE SIZE; REGIONAL CONTEXT	STUDY DESIGN; TIME POINTS OF MEASUREMENTS	MEASUREMENT METHOD	PA MEASURES			CHANGES IN PA			QUALITY ASSESSMENT SCORE (MAX, SUM SCORE = 10)
				PA INDICATOR	UNITS/ CATEGORIES/ SUBGROUPS	PREVALENCE OF PA DURING THE COVID19 PANDEMIC	PA DECREASED	NO CHANGE	PA INCREASED	
ADULTS										
SPOVID; Engels et al., 2021; Mutz & Gerke, 2020; Mutz & Reimers, 2021; Mutz, Müller, & Reimers, 2021; (10, 37, 38, 39)	Adults: 48,9 (18,7); N=1507; Germany (nationwide representative sample)	LS; pre-pandemic: October 2019; during pandemic: October 2020	Online questionnaire	Sports and exercise	Hours per week	1,7	2,1 → 1,7			9/10 10/10 9/10
				Light outdoor activity	Hours per week	3,2	3,5 → 3,2			
				Housework/ gardening	Hours per week	3,6	4,3 → 3,6			
				Active travel	Hours per week	2,3	2,9 → 2,3			
Tschuschke & Schröder, 2021 (53)	Adults (18-64): 33; N=282; Germany	CS (comparison with pre-pandemic data from 2012 (Wallmann-Sperlich and Froboese 2014)); during pandemic: April-May 2020	Online questionnaire	PA intensity	Percentage of adults engaging in different PA intensities					6/10
					Low	22,0%	22,0% → 22,0%			
					Medium	20,0%	25,0% → 20,0%			
				High	58,0%	53,0% → 58,0%				
Wendtlandt & Wicker, 2021 (54)	Adults: 18-64; N= 412; Germany	CS (retrospective data): 1st June - 31st August 2020	Online questionnaire	Types of sports	Hours per week participants engage in different types of sports activities					7/10
					nature dependent sport (e.g, canoeing, kayaking, skiing, swimming)	1,1	1,7 → 1,1			
					nature independent sport (e.g, hiking, golf, running, ballsports, biking)	4,5	4,6 → 4,5			
					nature-based sport (nature dependent and nature independent activities)	5,6	6,3 → 5,6			
					consuming sport (e.g, hunting, fishing)	0,6			0,4 → 0,6	
					motorized sport (e.g, quad bike, motor boat)	0,3		0,3 → 0,3		
					natural resource using sport (nature related and motorized activities in nature)	0,8			0,7 → 0,8	
					natural-neutral sport (e.g, gymnastics, fitness training, swimming in an indoor pool, basketball, tennis)	2,8	3,1 → 2,8			