



Physical activity for general health benefits in disabled children and disabled young people: evidence review: Appendix 3 – examples of reviews compared

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Cardiorespiratory fitness

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Butler et al.	2010	PD (CP)	3	Aerobic fitness	High	High	N
Armstrong et al.	2019	PD (CP)	9	Cardiorespiratory fitness	Moderate	Mod	N
Johnson et al.	2009	Mix	8	Aerobic capacity	Moderate	Low to Moderate	N
McPherson et al.	2014	Mix	13	Aerobic fitness; aerobic endurance; energy expenditure	Moderate	Low to Moderate	N
Paravlic et al.	2015	SI (VI)	4	Rate of perceived exertion; aerobic capacity	Moderate	Mod	N
Conrad et al.	2020	ID	3	Physical fitness	Low to Moderate	Low	N
Tint et al.	2017	ID	8	Aerobic fitness; cardiovascular endurance	Low to Moderate	Mod	N
Rogers et al.	2008	PD (CP)	13	Aerobic fitness	Low	Low	N
Verschuren et al.	2008	PD (CP)	20	Aerobic capacity	Low	Low	N
Dagenais et al.	2009	PD	4	Cardiovascular endurance	Low	Low	N
Deutsch et al.	2015	PD (CP)	4	Energy expenditure	No evidence	No evidence	N
Fang et al.	2019	ID (ASD)	7	Physical fitness	No evidence	No evidence	N
Lang et al.	2010	ID (ASD)	13	Aerobic fitness; energy expenditure	No evidence	No evidence	N

Muscular outcomes

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Fleeton et al.	2020	PD (CP)	22	Muscle strength	High	High	N
Keawutan et al.	2014	PD (CP)	10	Motor capacity	High	High	N
Zhang et al.	2020	ID	11	Gross motor skills	High	High	N
Clutterbuck et al.	2019	PD (CP)	34	Gross motor function	Moderate to High	Moderate to High	N
Armstrong et al.	2019	PD (CP)	9	Hamstring strength; gross motor function	Moderate	Moderate	N
Gillett et al.	2016	PD (CP)	6	Hypertrophy	Moderate	Moderate	N
Li et al.	2013	ID (DS)	6	Muscle strength	Moderate	Moderate to High	Y
Kapsal et al.	2019	ID	109	Physical health	Moderate	Moderate	N
Hocking et al.	2019	Mix	11	Gross motor skills	Moderate	Moderate	N
McPherson et al.	2014	Mix	13	Muscle strength	Moderate	Low to Moderate	N
Johnson et al.	2009	Mix	8	Gross motor function	Moderate	Low to Moderate	N
Paravlic et al.	2015	SI (VI)	4	Unilateral peak torque; explosive strength; grip strength	Moderate	Moderate	N
Martin et al.	2010	PD (CP)	34	Muscle strength; gross motor skills; endurance	Low to Moderate	Low to Moderate	N
Tint et al.	2017	ID	8	Leg power; handgrip strength; muscular endurance	Low to Moderate	Moderate	N
Verschuren et al.	2008	PD (CP)	20	Muscle strength	Low	Low	N
Roostaei et al.	2006	PD (CP)	10	Gross motor skills	Low	Low	N
Dagenais et al.	2009	PD	4	Hand grip; quadriceps strength	Low	Low	N

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Lang et al.	2010	ID (ASD)	13	Gross motor skills	No evidence	No evidence	N
Kamp et al.	2014	ID (AD/HD)	5	Motor skills; strength		No evidence	N
Vysniauske et al.	2020	ID (AD/HD)	13	Motor skills	No evidence	No evidence	N
Lee et al.	2016	PD	7	Motor skills	No evidence	No evidence	N

Disease risk and prevention

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Paravlic et al.	2015	SI (VI)	4	Fatty tissue percentage	Moderate	Moderate	N
Conrad et al.	2020	ID	3	Body weight; fat mass	Low to Moderate	Low to Moderate	N
Tint et al.	2017	ID	8	Tricep skinfold	Low to Moderate	Low to Moderate	N
Maiano et al.	2014	ID	1	Body weight; fat mass	Low	Low to Moderate	N

Psychological outcomes

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Zang	2019	ID (AD/HD)	14	Anxiety; depression	Moderate to High	Moderate to High	N
Arbour-Nicitopoulos et al.	2018	PD	7	Psychological well-being	Moderate	Moderate	N
Tint et al.	2017	ID	8	Self-concept; self-esteem	Low to Moderate	Low to Moderate	N
May et al.	2021	Mix	19	Self-concept	Low	Low	N
Sahlin and Lexell	2015	Mix	2	Self-perceived physical appearance	Low	Low	N
Fang et al.	2019	ID (ASD)	7	Self-perception	No evidence	No evidence	N

Functional skills

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Chen et al.	2018	PD (CP)	15	Arm function; postural control; ambulation	Moderate to High	High	N
Ma et al.	2020	ID	10	Balance	Moderate to High	Moderate to High	N
Armstrong et al.	2019	PD (CP)	9	Balance	Moderate	Moderate	N
Cooper and Williams	2017	PD (CP)	6	Balance	Moderate	Moderate	N
Li et al.	2013	ID (DS)	6	Balance	Moderate	Moderate	Y
Hocking et al.	2019	Mix	11	Balance	Moderate	Moderate	N
McPherson et al.	2014	Mix	13	Functional abilities	Moderate	Moderate	N
Page et al.	2017	Mix	19	Balance	Moderate	Moderate	N
Arbour-Nicitopoulos et al.	2018	PD	7	Physical skills	Moderate	Moderate	N
Paravlic et al.	2015	SI (VI)	4	Flexibility; dynamic balance	Moderate	Moderate	N
Dewar et al.	2015	PD (CP)	45	Postural control	Low to Moderate	Low to Moderate	N
Martin et al.	2010	PD (CP)	34	Gait speed; stride length	Low to Moderate	Low to Moderate	N
Hardee et al.	2017	ID (DS)	11	Daily life activities	Low to Moderate	Low to Moderate	N
Maiano et al.	2019a	ID	14	Fundamental movement skills; balance	Low to Moderate	Low to Moderate	N
Tint et al.	2017	ID	8	Flexibility	Low to Moderate	Low to Moderate	N
Maiano et al.	2019b	ID (DS)	9	Static balance	Low	Low	Y
Melo et al.	2020	SI (HI)	5	Balance; gait	Low	Low	Y
Maiano et al.	2019c	ID	13	Static balance; dynamic balance	Low	Low	Y
May et al.	2021	Mix	19	Balance; jumping skills	Low	Low	N

Psychosocial, wellbeing and community

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Tsoi et al.	2012	PD (CP)	2	Quality of life	Moderate	High	N
Kapsal et al.	2019	ID	109	Psychosocial health	Moderate	Moderate	N
Ash et al.	2017	Mix	23	Sociability	Moderate	Moderate	N
Arbour-Nicitopoulos et al.	2018	PD	7	Social skills and relationships	Moderate	Moderate	N
Tint et al.	2017	ID	8	Personal development; social competence	Low to Moderate	Low to Moderate	N
May et al.	2021	Mix	19	Social competency	Low	Low	N
Sahlin and Lexell	2015	Mix	2	Global self-worth	Low	Low	N
Lang et al.	2010	ID (ASD)	13	Self-stimulation; attention; stereotypy	No evidence	No evidence	N
Kamp et al.	2014	ID (AD/HD)	5	Social behaviour	No evidence	No evidence	N

Cognitive outcomes

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Suarez-Manzano et al.	2018	ID (AD/HD)	16	Executive functions	High	High	Y
Zhang et al.	2020	ID	11	Inhibitory control; cognitive flexibility	High	High	N
Christiansen et al.	2019	ID (AD/HD)	18	Executive functions	Moderate	Moderate	Y

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Grassmann et al.	2017	ID (AD/HD)	3	Executive functions	Moderate	Moderate	Y
Lambeiz et al.	2020	ID (AD/HD)	11	Cognitive functioning	Moderate	Moderate	N
Varigonda et al.	2020	ID	28	Attention; working memory	Moderate	Moderate	N
Fragala-Pinkham et al.	2020	ID	5	Cognitive skills	Low to Moderate	Low	N
Berwid and Halperin	2012	ID (AD/HD)	5	Neuropsychological functioning	Low	Low	N
Saitta et al.	2019	ID (AD/HD)	1	Concentration	Low	Low	N
May et al.	2021	Mix	19	Attention; learning; organisation	Low	Low	N
Fang et al.	2019	ID (ASD)	7	Executive function	No evidence	No evidence	N
Lang et al.	2010	ID (ASD)	13	Self-stimulation; attention; stereotypy	No evidence	No evidence	N
Archer and Kostrzewa	2012	ID (AD/HD)	3	Cognitive functioning	No evidence	No evidence	N
Gapin et al.	2011	ID (AD/HD)	0	Cognitive performance	No evidence	No evidence	N
Vysniauske et al.	2020	ID (AD/HD)	13	Executive function	No evidence	No evidence	N

Behavioural outcomes

Author	Year	Disability category	Included studies (children only)	Improved outcomes	Evidence level/quality	Outcome confidence	Reviewed by WHO
Suarez-Manzano et al.	2018	ID (AD/HD)	16	General behaviour	High	High	Y
Zang	2019	ID (AD/HD)	14	Aggression	Moderate to High	High	N
Ash et al.	2017	Mix	23	Classroom functioning; academic performance	Moderate	Moderate	N
Tint et al.	2017	ID	8	Maldaptive behaviour; problem behaviour	Low to Moderate	Low to Moderate	N
Berwid and Halperin	2012	ID (AD/HD)	5	Behavioural symptoms	Low	Low	N
Gapin et al.	2011	ID (AD/HD)	0	Behavioural symptoms	No evidence	No evidence	N