

Suppl Table 1 Step counting treadmill validation studies among wearable technologies in youth

Reference	Sample	Protocol (duration and speeds)	Wearable Technologies	Accuracy	Precision	Bias
<i>Pedometer Studies</i>						
Beets, Patton and Edwards 2004	20 children (50% females), 5 to 11 years	2-min: 40, 54, 67, 80, and 94 m/min	Walk4Life 2505 (WL), Digiwalker SW-200 (DW200), Sun TrekLINQ (SUN) and Digiwalker SW-701 (DW701)	MAPE: Only visualized in graph	ICC: WL: 0.516-0.992 DW200: 0.727-0.998 SUN: 0.330-0.971 DW701: 0.722-0.993	Not reported
Trapp et al. 2012	45 children (51.1% females), age 10.67 ± 0.77 years	3-min: 40, 67, 91 m/min	Accuspllit AH120, DigiWalker SW-700	MAPE: AH120 = 46.9-8.6% SW-700 = 44.1-8.9%	Not reported	Bland-Altman Plots

Ramírez- Marrero et al. 2002	31 children (45.2% females) 7 to 12 years	2 min at 59, 70, 91 m/min	Digiwalker SW- 200 (hip; belt), Digiwalker SW- 200 (midline; pouch)	MAPE: Hip = 1-15% Midline = 2-5%	Not reported	Not reported
Mitre et al. 2009	27 children (51.9% females) 8 to 12 years	5-min: 13.4, 26.8, 40.2, 53.6 m/min	Omron HJ-105, DigiWalker SW- 200	Not reported	Not reported	MPE: Omron HJ- 105 and DigiWalker SW-200: 100- 60% Bland-Altman Plots

Dueker, Gauderman, and McConnell, 2012	17 children (58.8% females), aged 10 to 17 years	5-min: 53.6, 80.5, 107.3, 134.1 m/min	SportBrain iStep X1, Digiwalker SW-701	MAPE	Not reported	MPE: iStep X1= - 1.3 to -3.9% SW-701= - 19.3 to -4.3%
Aminian and Hinckson, 2012	25 children (68% females) 9.9 ± 0.3 years	2-min: 50, 66, 93, 133 m/min	Yamax DigiWalker SW- 200 and NL-2000	Not reported	Not reported	MPE: SW-200: -4% to 1% NL-2000: -11% to 1%
Rosenkranz, Rosenkranz, and Weber, 2011	19 children (36.8% female) aged 7–11 years	3-min 40.2, 80.5, 120.7, 161 m/min	Digiwalker SW- 200	Not reported	Not reported	MPE: -4% (not specified by speeds)

Accelerometer Studies

Aminian and Hinckson, 2012	25 children (68% females) 9.9 ± 0.3 years of age	2/min: 50, 66, 93, 133 m/min	ActivPAL	Not reported	ICC: ActivPAL: 0.21-1.00	Not reported
Rosenkranz, Rosenkranz, and Weber, 2011	19 children (36.8% female) aged 7–11years	3-min: 40.2, 80.5, 120.7, 161 m/min	Actical (waist), Actical (ankle)	Not reported	ICC: Waist: 0.927 Ankle: 0.854 (not specified by speeds)	MPE: Waist: -11% Ankle: -17% (not specified by speeds)

ICC = Intra-class coefficient; MAPE = Mean absolute percentage error; MPE = Mean percentage error