

FINGER AND HAND EXTENSION & ABDUCTION

Reference Values

A quick-reference for interpreting SPLAYOMETER measurements.

PRELIMINARY

Published norms for finger extension and abduction are limited, and come from small studies rather than clinical norming. **No published normative data exists for isolated per-digit finger abduction strength**, and none is presented here. Prefer **within-patient serial tracking** over direct comparison.

Finger Extension Force (Whole Hand)

All four fingers together, thumb excluded; MCP joints at a fixed angle, force-transducer measurement (EX-it device). Dominant hand. Values in newtons, as reported.

COHORT	MEN	WOMEN
Healthy adults, mean age 25 n = 10 each	105.1 ± 6.8	58.7 ± 4.0
Healthy controls, age 55–60 n = 12 men / 45 women	66.2 ± 29.7	39.1 ± 12.5
Rheumatoid arthritis p < 0.05 men, p < 0.001 women, vs. controls	38.2 ± 16.5	14.8 ± 9.5

Brorsson et al. (2008). Flexion force in the same young cohort (Grippit) was 553.5 N men / 320 N women. Whole-hand values – the source reports no per-digit means. Device biomechanics differ from the SPLAYOMETER; treat as orientation, not threshold.

Whole-Hand Spread (Multifinger Abduction)

Cumulative four-finger abduction and adduction force – applicable to hand-loop measurement.

Total abduction (4-finger spread) Mean, healthy adults	~7.3 lb ~3.3 kg
Total adduction (4-finger squeeze) Mean, healthy adults	~9.5 lb ~4.3 kg
Sex effect Sex-stratified means not reported	M > F

Pataky, Latash & Zatsiorsky (2008), n = 21 (12 F / 9 M), healthy subjects only. Four independent transducers; hand-loop biomechanics differ – treat as orientation, not threshold. Multifinger performance is not predictable from single-finger strengths.

Evidence-based context

- **Extension is a fraction of flexion:** in the same young subjects, whole-hand extension averaged 105.1 N (men) and 58.7 N (women) against flexion of 553.5 N and 320 N – roughly 19% (Brorsson 2008).
- **Reduced in rheumatoid arthritis:** significantly lower than in age-matched controls (men $p < 0.05$, women $p < 0.001$), and correlated with reported pain level ($p < 0.01$) (Brorsson 2008).
- **Flexion stops predicting extension in disease:** the two correlated in healthy women ($r = 0.65$, $p = 0.002$) but not in women with RA ($r = 0.25$, $p = 0.289$) (Brorsson 2012).
- **Inter-finger dependence ("enslaving"):** activating one finger produces force in adjacent fingers – relevant to inter-digit abduction (Zatsiorsky 2000).
- **Whole-hand spread is its own metric:** multifinger ab/adduction force is not predictable from single-finger strengths – measure it directly (Pataky 2008).
- **Age effects:** grip strength peaked within the 25–39 age group for both sexes and declined gradually thereafter (Mathiowetz 1985).

Recommended clinical application

Establish a baseline at session 1, replicate test conditions at each follow-up, and document change over time as the primary outcome. A SPLAYOMETER-specific minimal detectable change (MDC) has not been published – interpret session-to-session variation against your own setup repeatability rather than a fixed threshold. For context, published MDC values for grip dynamometry range from 2.7 to 5.2 kg (Bohannon 2019); no equivalent value exists for finger extension or abduction.

SOURCES

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