

Supplementary Table 1. Acronyms and descriptions of the analysed grasping parameters.

Parameter Acronym		Parameter Description
transport component	GT	interval from movement onset to lever contact (grasping time)
	Vmax	peak tangential hand velocity
	Skew	ratio of deceleration time (Vmax to lever contact) and GT
	Detour	Ratio of actually travelled and shortest possible hand path in 3D
	Detour-H	horizontal component of Detour
grasp component	PGA	peak 3D distance from thumb to indexfinger (peak grip aperture)
	t(PGA)	interval from movement onset to PGA
	t(FGA)	interval from PGA to lever contact
	Incli-start	hand inclination with respect to the horizontal at movement onset
	incli-100	hand inclination 100ms after movement onset
	incli-PGA	hand inclination at t(PGA)
	incli-end	hand inclination at lever contact
lever manipulation	F-100	force compressing the lever 100 ms after lever contact
	TQ-100	3D torque on the lever 100 ms after lever contact
	Fmax	maximal force compressing the lever
	TQmax	maximal 3D torque on the lever
	t(Fmax)	interval from lever contact to Fmax
	t(TQmax)	interval from lever contact to TQmax
	LT	interval from onset to peak amplitude of lever motion (lever time)

Supplementary Table 2. Across-subject averages and ANOVA outcome for parameters representing means.

	Parameter	mean \pm sd				Task	ANOVA	
		L	E	young	older		Age	Task * Age
Transport component	GT (s)	0.41 \pm 0.08	0.49 \pm 0.12	0.38 \pm 0.05	0.52 \pm 0.11	18.87***	56.16***	4.91*
	Vmax (cm/s)	157.04 \pm 31.26	150.34 \pm 27.17	174.16 \pm 21.67	133.23 \pm 19.66	1.24n.s.	46.19***	0.02n.s.
	Skew (s)	0.63 \pm 0.04	0.57 \pm 0.04	0.59 \pm 0.06	0.60 \pm 0.04	25.08***	0.21n.s.	4.33*
	Detour (cm)	1.07 \pm 0.04	1.11 \pm 0.06	1.09 \pm 0.04	1.10 \pm 0.06	4.86*	0.74n.s.	0.88n.s.
	Detour-H (cm)	2.50 \pm 0.98	3.54 \pm 1.05	2.98 \pm 1.06	3.07 \pm 1.09	14.49***	0.09n.s.	0.56n.s.
Grasp component	PGA (cm)	9.29 \pm 1.04	9.19 \pm 0.98	9.89 \pm 0.86	8.59 \pm 0.66	0.16n.s.	33.21***	0.002n.s.
	t(PGA) (s)	0.25 \pm 0.07	0.34 \pm 0.13	0.23 \pm 0.05	0.36 \pm 0.13	18.24***	31.65***	4.54*
	t(FGA) (s)	0.16 \pm 0.04	0.17 \pm 0.05	0.15 \pm 0.05	0.18 \pm 0.05	0.17n.s.	3.79n.s.	0.69n.s.
	Incli-start ($^{\circ}$)	23.94 \pm 8.29	28.43 \pm 13.37	22.19 \pm 9.95	30.18 \pm 11.21	2.23n.s.	7.04*	1.21n.s.
	incli-100 ($^{\circ}$)	13.07 \pm 5.02	20.90 \pm 13.90	16.16 \pm 8.56	17.82 \pm 12.99	6.48*	0.29n.s.	0.09n.s.
	incli-PGA ($^{\circ}$)	13.54 \pm 4.14	19.61 \pm 7.69	16.31 \pm 8.56	16.85 \pm 4.69	11.61**	0.09n.s.	1.96n.s.
	incli-end ($^{\circ}$)	27.44 \pm 4.90	28.05 \pm 6.62	26.58 \pm 5.94	28.91 \pm 5.47	0.13n.s.	2.01n.s.	1.97n.s.
Lever manipulation component	F-100 (N)	6.65 \pm 6.01	3.39 \pm 3.40	2.44 \pm 3.25	6.85 \pm 5.43	4.34*	12.62***	1.70n.s.
	TQ-100 (N/mm)	21.94 \pm 13.62	12.73 \pm 12.73	14.14 \pm 10.39	22.21 \pm 15.33	4.16*	4.79*	0.20n.s.
	Fmax (N)	12.31 \pm 7.21	7.21 \pm 4.11	9.14 \pm 3.33	10.38 \pm 6.26	17.14***	1.01n.s.	2.16n.s.
	TQmax (N/mm)	38.37 \pm 11.69	28.01 \pm 11.69	26.82 \pm 9.92	27.36 \pm 15.24	5.92*	0.02n.s.	0.16n.s.
	t(Fmax) (s)	0.23 \pm 0.05	0.28 \pm 0.12	0.21 \pm 0.03	0.29 \pm 0.11	5.15*	15.61***	5.05*
	t(TQmax) (s)	0.23 \pm 0.04	0.28 \pm 0.11	0.21 \pm 0.03	0.30 \pm 0.10	6.41*	19.79***	6.30*
	LT (s)	0.11 \pm 0.02	0.13 \pm 0.05	0.10 \pm 0.06	0.15 \pm 0.05	4.87*	29.14***	5.76*

Scores in the left part are across-subject means and standard deviations. Scores in the right part are F-values for 1,44 degrees of freedom, with n.s. *, **, *** and representing $P > 0.05$, $P < 0.05$, $P < 0.01$, $P < 0.001$, respectively.

Supplementary Table 3. Across-subject averages and ANOVA outcome for parameters representing coefficients of variation.

	Parameter	mean \pm sd				ANOVA		
		L	E	young	older	Task	Age	Task * Age
Transport component	GT (s)	0.10 \pm 0.04	0.10 \pm 0.03	0.10 \pm 0.03	0.10 \pm 0.03	0.001n.s.	0.27n.s.	0.38n.s.
	Vmax (cm/s)	0.07 \pm 0.02	0.08 \pm 0.03	0.08 \pm 0.02	0.08 \pm 0.03	3.63n.s.	0.05n.s.	3.6n.s.
	Skew (s)	0.11 \pm 0.03	0.13 \pm 0.03	0.12 \pm 0.03	0.12 \pm 0.03	4.35*	0.21n.s.	5.68*
	Detour (cm)	0.05 \pm 0.04	0.04 \pm 0.03	0.05 \pm 0.04	0.05 \pm 0.03	2.23n.s.	0.16n.s.	0.77n.s.
	Detour-H (cm)	0.31 \pm 0.10	0.25 \pm 0.09	0.27 \pm 0.09	0.28 \pm 0.10	0.30n.s.	0.23n.s.	0.30n.s.
Grasp component	PGA (cm)	0.08 \pm 0.11	0.05 \pm 0.02	0.09 \pm 0.11	0.05 \pm 0.03	1.52n.s.	2.29n.s.	0.41n.s.
	t(PGA) (s)	0.17 \pm 0.11	0.25 \pm 0.21	0.22 \pm 0.16	0.21 \pm 0.19	2.54n.s.	0.02n.s.	0.31n.s.
	t(FGA) (s)	0.32 \pm 0.19	0.32 \pm 0.14	0.35 \pm 0.19	0.29 \pm 0.13	0.17n.s.	1.21n.s.	0.87n.s.
	Incli-start ($^{\circ}$)	0.29 \pm 0.13	0.24 \pm 0.13	0.29 \pm 0.14	0.25 \pm 0.12	1.65n.s.	1.34n.s.	0.78n.s.
	incli-100 ($^{\circ}$)	0.46 \pm 0.17	0.43 \pm 0.19	0.39 \pm 0.15	0.51 \pm 0.19	0.03n.s.	5.37*	0.07n.s.
	incli-PGA ($^{\circ}$)	0.27 \pm 0.20	0.22 \pm 0.11	0.29 \pm 0.21	0.19 \pm 0.08	1.39n.s.	5.08*	0.17n.s.
	incli-end ($^{\circ}$)	0.12 \pm 0.05	0.14 \pm 0.07	0.14 \pm 0.07	0.13 \pm 0.06	1.43n.s.	0.32n.s.	0.04n.s.
Lever manipulation component	F-100 (N)	1.19 \pm 0.98	1.15 \pm 1.18	1.54 \pm 0.89	0.84 \pm 0.62	0.05n.s.	10.17**	0.17n.s.
	TQ-100 (N/mm)	0.95 \pm 0.54	1.05 \pm 0.59	1.23 \pm 0.62	0.76 \pm 0.39	0.48n.s.	9.96**	1.86n.s.
	Fmax (N)	0.29 \pm 0.08	0.39 \pm 0.15	0.32 \pm 0.09	0.36 \pm 0.16	10.39**	1.16n.s.	2.21n.s.
	TQmax (N/mm)	0.44 \pm 0.09	0.47 \pm 0.16	0.48 \pm 0.12	0.44 \pm 0.14	0.59n.s.	0.99n.s.	3.29n.s.
	t(Fmax) (s)	0.12 \pm 0.05	0.32 \pm 0.17	0.19 \pm 0.15	0.24 \pm 0.17	31.53***	2.30n.s.	0.43n.s.
	t(TQmax) (s)	0.13 \pm 0.04	0.19 \pm 0.07	0.15 \pm 0.06	0.17 \pm 0.07	12.12**	1.11n.s.	0.21n.s.
	LT (s)	0.13 \pm 0.04	0.15 \pm 0.04	0.14 \pm 0.03	0.15 \pm 0.05	1.77n.s.	0.08n.s.	0.84n.s.

Scores in the left part are across-subject means and standard deviations. Scores in the right part are F-values for 1,44 degrees of freedom, with n.s. *, **, *** and representing $P > 0.05$, $P < 0.05$, $P < 0.01$, $P < 0.001$, respectively.

Supplementary Table 4. Outcome of factor analysis.

	Parameter	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Transport component	GT	0,8076	0,2215	-0,1539	0,1242	0,0945
	Skew	0,2002	-0,1141	0,3350	-0,1834	0,5760
	CV Skew	0,0341	-0,0550	-0,0012	0,1895	-0,1047
	Detour	0,0089	-0,2338	0,1541	0,0750	0,8592
	Detour-H	0,0516	0,0008	-0,2024	0,0451	0,7866
Imponent	t(PGA)	0,8260	0,1486	0,0236	0,0571	0,1063
	Incli-100	-0,2521	-0,1514	-0,1210	0,7821	0,0732
	Incli-PGA	0,1710	-0,0959	0,4782	0,6765	0,1220
Lever manipulation component	F-100	0,3429	0,7636	-0,0924	0,0817	-0,1137
	TQ-100	0,0632	0,9353	0,0972	0,0211	-0,1099
	Fmax	0,0863	0,9164	0,0025	-0,1192	0,0145
	CV Fmax	0,0737	0,3794	-0,1394	0,6332	0,0814
	TQmax	0,0003	0,9024	0,1156	-0,1120	-0,1325
	t(Fmax)	0,9531	0,1353	0,1161	-0,1001	0,0356
	CV t(Fmax)	-0,0519	-0,0777	-0,9342	0,0860	-0,0717
	t(TQmax)	0,9506	0,0804	0,1335	-0,0579	0,0217
	CV t(TQmax)	0,1600	-0,0622	-0,9170	-0,0274	0,0131
	LT	0,8426	-0,1117	-0,1793	0,0040	-0,0188
	% tot. var.	0,2309	0,1932	0,1262	0,0901	0,0998

Scores are factor loadings, with values ≥ 0.6 marked in bold. All parameters with significant ANOVA-effects of Task and/or Task * Age were selected for this analysis. The bottom row indicates the fraction of total variance explained by the respective factor.