

Is there a statistical correlation between grip and core strength within healthy individuals between 40 and 79 years of age?

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Background

Bekhterev's disease is a chronic inflammatory, rheumatic disease. To evaluate the fitness status of affected persons, annual hand grip and core strength assessments are performed. Since the core strength assessment is a time-consuming procedure, the question arises whether it can be replaced by the less time-consuming grip strength assessment.

Aim of this study

This study explores the statistical correlation between grip and core strength in healthy subjects.

Methods

80 women and 80 men participated in the cross-sectional study. The ventral, lateral, and dorsal core muscles were assessed using a core strength test battery (see pictures) whereas grip strength was assessed using a hand dynamometer. The statistical correlation was calculated using Spearman's rank correlation coefficient.

Results

Females show a medium correlation between grip strength and the ventral chain ($r_s=0.341$, $p=0.002$, $n=80$) and a strong correlation between grip strength and the lateral ($r_s=0.457$, $p<0.001$, $n=80$) and dorsal chain ($r_s=0.435$, $p<0.001$, $n=80$). In men, there is a weak correlation between grip strength and the lateral chain ($r_s=0.242$, $p<0.030$, $n=80$). The ventral and dorsal chains do not correlate with the grip strength.

Conclusion

No clear correlation can be shown across the entire study. Further studies with larger numbers of participants are needed to represent the norm population.



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Male (n=80)		r_s	96% CI	p
Grip (stronger hand) M = 47.600	Core ventral M = 112.787	0.130	-0.99; 0.346	0.251
	Core lateral M = 68.550	0.242	0.017; 0.444	0.030*
	Core dorsal M = 102.000	0.116	-0.113; 0.333	0.306
Female (n=80)		r_s	96% CI	p
Grip (stronger hand) M = 27.692	Core ventral M = 82.313	0.341	0.125; 0.527	0.002*
	Core lateral M = 44.550	0.457	0.258; 0.619	<0.001*
	Core dorsal M = 109.288	0.435	0.232; 0.602	<0.001

Reference Title

Rausch, A.-K., Baltisberger, P., Meichtry, A., Topalidis, B., Ciurea, A., Vliet Vlieland, T. P. M., & Niedermann, K. (2020). Reliability of an adapted core strength endurance test battery in individuals with axial spondylarthritis. *Clinical Rheumatology*, 40(4), 1353–1360. <https://doi.org/10.1007/s10067-020-05408-6>