

## Publication

# Norm Values of Muscular Strength Across the Life Span in a Healthy Swiss Population: The COMplete Study.

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Grip strength is used to estimate whole-body strength for health surveillance purposes. Explosive strength is considered important, yet economic measures able to detect early deterioration of neuromuscular capabilities are lacking. Whether handgrip maximum rate of force development (GRFD) or whole-body strength tests are better predictors of lower body power than handgrip maximum strength (GF; max; ) and their trajectories throughout the life span are unknown.; GRFD should be more closely related to lower body power than GF; max; , and its trajectories over the life span should more closely follow that of lower body power.; Cross-sectional.; Level 2b.; A total of 613 healthy participants aged 20 to 91 years were tested for countermovement jump peak power, GF; max; , handgrip rate of force development, and midhigh pull peak force (MTP). Cubic splines and linear models were built for age trajectories, generalized additive models for quintile curves, and linear regression was used to assess predictive quality.; Peak power (P; max; ) declined linearly to 60% of young adult level, with GRFD, GF; max; , and MTP remaining stable up to age 50 years and then declining more sharply to 52% to 71% of young adult levels. Trajectories were similar for male and female participants. GRFD ( $\beta = 0.17$ ) and MTP ( $\beta = 0.08$ ) were worse predictors of P; max; than GF; max; ( $\beta = 0.24$ ) in models adjusted for age, sex, lean body mass, and vigorous physical activity levels.; GRFD was not superior to maximum strength in predicting lower body power. For health surveillance purposes, it therefore appears that GF; max; tests are more economical and equally good predictors of lower body explosive strength at older age. The data provided can be used as norm values for healthy subjects.; Incorporating countermovement jump testing for early detection of declines in explosive capabilities might be advised.

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