

## The Research of Hand-Grip Strength for Adults with Intellectual Disability

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**Abstract :** An adult with intellectual disability generally has insufficient physical activity which is an important factor leading to premature weakness. Studies in recent years on frailty syndrome have accumulated substantial data about indicators of human aging, including unintentional weight loss, self-reported exhaustion, weakness, slow walking speed, and low physical activity. Of these indicators, hand-grip strength can be seen as a predictor of mortality, disability, complications, and increased length of hospital stay. Hand-grip strength in fact provides a comprehensive overview of one's vitality. The research is about the investigation on hand-grip strength of adults with intellectual disabilities in facilities, institutions and workshops. The participants are 197 male adults ( $M=39.09\pm12.85$  years old), and 114 female ones ( $M=35.80\pm8.2$  years old) so far. The aim of the study is to figure out the performance of their hand-grip strength, and initiate the setting of training on hand-grip strength in their daily life which will decrease the weakening on their physical condition. Test items include weight, bone density, basal metabolic rate (BMR), static body balance except hand-grip strength. Hand-grip strength was measured by a hand dynamometer and classified as normal group ( $\geq 30$  kg for male and  $\geq 20$  kg for female) and weak group ( $< 30$  kg for male,  $< 20$  kg for female). The analysis includes descriptive statistics, and the indicators of grip strength for the adults with intellectual disability. Though the research is still ongoing and the participants are increasing, the data indicates: (1) The correlation between hand-grip strength and degree of the intellectual disability ( $p \leq .001$ ), basal metabolic rate ( $p \leq .001$ ), and static body balance ( $p \leq .01$ ) as well. Nevertheless, there is no significant correlation between grip strength and basal metabolic rate which had been having significant correlation with hand-grip strength. (2) The difference between male and female subjects in hand-grip strength is significant, the hand-grip strength of male subjects ( $25.70\pm12.81$  Kg) is much higher than female ones ( $16.30\pm8.89$  Kg). Compared to the female counterparts, male participants indicate greater individual differences. And the proportion of weakness between male and female subjects is also different. (3) The regression indicates the main factors related to grip strength performance include degree of the intellectual disability, height, static body balance, training and weight sequentially. (4) There is significant difference on both hand-grip and static body balance between participants in facilities and workshops. The study supports the truth about the sex and gender differences in health. Nevertheless, the average hand-grip strength of left hand is higher than right hand in both male and female subjects. Moreover, 71.3% of male subjects and 64.2% of female subjects have better performance in their left hand-grip which is distinctive features especially in low degree of the intellectual disability.

**Keywords :** adult with intellectual disability, frailty syndrome, grip strength, physical condition

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