Department of Biomechanics

Master Degree

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Title	**:**	**Effect of Hand Anthropometry on Grip Strength in Normal Subjects.**
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Abstract	**:**	

The purpose of this study was to investigate the effect of structural anthropometry of the hand (hand length, palm length, palm breadth, fingers lengths, fingers breadths, wrist circumference, and forearm circumference) and functional anthropometry of the hand (grip reach and elbow grip length) on the hand grip strength in normal Faculty students. One hundred normal students volunteered to participate in this study (50 males and 50 females). The mean age of the male group was 20.6 ± 1.26 years and female group was 20.14 ± 0.82 years. The mean weight of the male group was 76.44 ± 9.86 kg and the female group was 62.77 ± 9.54 kg. The mean height of the male group was 176.64 ± 6.66 cm and the female group was 157.16 ± 14.74 cm. Comparison between male and female groups was performed by using statistical unpaired t-test. The correlation among each one of the structural and functional anthropometry and the hand grip strength were studied using Multiple regression analysis and the Pearson Product Moment Correlation Coefficient (r). All statistical analysis was performed using Stat Graphics Plus software with a significance level of 0.05. Statistical analysis revealed that there were significant differences ($p < 0.05$) between males and females regarding the eight variables (hand length, palm length, wrist circumference, MCP joint circumference, forearm circumference, grip reach, elbow grip length, and hand grip strength. For the remaining eleven variables, statistical test showed no significant differences between males and females. Regarding the relationship between hand length, palm length, palm breadth, fingers lengths, wrist circumference, MCP joint circumference, forearm circumference, grip reach, elbow grip length, statistical analysis revealed a significant moderate strong relationship between each one of these variables and the hand grip length except for the thumb finger length. Similarly the correlation coefficient between each finger breadth and hand grip strength indicated a relatively weak relationship. The study supports the need for pre-employment screening and it is also useful for ergo-design application of hand tools and devices. The data are also needed in sports to search the talented individuals.

Key words	**1.**	**hand anthropometry.**
	2.	**grip Strength.**
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